PACIFIC SALMON COMMISSION
SELECTIVE FISHERY EVALUATION COMMITTEE

# REVIEW OF MASS MARKING AND MARK-SELECTIVE FISHERY ACTIVITIES PROPOSED TO OCCUR IN 2012

REPORT SFEC (13)-2

May 2013

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## LIST OF ACRONYMS WITH DEFINITIONS

| | | | |
|---|---|---|---|
| **ADFG** | Alaska Department of Fish and Game | **MU** | Management Unit |
| **AK** | Alaska | **NSF** | Non-Selective Fishery |
| **BC** | British Columbia | **ODFW** | Oregon Department of Fish and Wildlife |
| **BY** | Brood Year | **OR** | Oregon |
| **CA** | California | **PS** | Puget Sound |
| **CDFG** | California Department of Fish and Game | **PSC** | Pacific Salmon Commission |
| **CDFO** | Canadian Department of Fisheries and Oceans | **PSMFC** | Pacific States Marine Fisheries Commission |
| **COLR** | Columbia River | **PST** | Pacific Salmon Treaty |
| **CoTC** | Coho Technical Committee | **RMIS** | Regional Mark Information System |
| **CST** | Coast | **SFAWG** | SFEC- Analytical Work Group |
| **CTC** | Chinook Technical Committee | **SFEC** | Selective Fishery Evaluation Committee |
| **CWT** | Coded-Wire Tag | **SFEC-RCWG** | SFEC- Regional Coordination Work Group |
| **DIT** | Double-Index Tag | **SHRP** | Sport Head Recovery Program |
| **ER** | Exploitation Rate | **SJDF** | Strait of Juan de Fuca |
| **ETD** | Electronic Tag Detection | **URB** | Upriver Bright (Fall Chinook) |
| **ID** | Idaho | **US** | United States |
| **IDFG** | Idaho Department of Fish and Game | **VTR** | Voluntary Trip Report |
| **MM** | Mass Marking | **WA** | Washington |
| **MOU** | Memorandum of Understanding | **WCVI** | West Coast Vancouver Island |
| **MSF** | Mark-Selective Fishery | **WDFW** | Washington Department of Fish and Wildlife |

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## EXECUTIVE SUMMARY

This report provides a summary of the proposed coastwide plans for mass marking (MM) of Coho and Chinook salmon and the conduct of mark-selective fisheries (MSFs) in 2012. Issues with implications for maintaining the coastwide coded-wire tag program are identified and recommendations are proposed.

## *Summary of 2012 Mass Marking Proposals*

Throughout this report a mass-marked fish refers to a fish with an adipose-fin clip and a double-index tag (DIT) group includes two related coded-wire-tag (CWT) groups, one marked and one unmarked. The terms 'marked' and 'clipped', and likewise 'unmarked' and 'unclipped', are used interchangeably.

### Mass Marking and DIT Programs

Twenty-two proposals (8 for Coho and 14 for Chinook) were received for mass marking (MM) occurring in 2012 (Appendix E). The Selective Fishery Evaluation Committee (SFEC) believes these proposals cover all MM programs of relevance to the Pacific Salmon Commission (PSC).

Approximately 35 million Coho are proposed to be mass-marked coastwide in 2012 (Table 2.1; Figure 2.1A), a level comparable to that proposed for 2011. Essentially all hatchery Coho production intended for harvest from southern British Columbia (BC) and southern United States (US) hatcheries will be mass marked. Currently, there are 19 proposed Coho salmon DIT groups (Table 2.1), of which two will be released from southern BC, seven from Puget Sound (PS), six from the Washington (WA) coast, and four from the Columbia River Basin.

Approximately 113 million Chinook are proposed to be mass marked in 2012 from southern US Chinook hatcheries (Table 2.1; Figure 2.1B). This is approximately 7 million more than were proposed for 2011. Most all hatchery Chinook production from southern US hatcheries intended for harvest will be mass marked. Currently there are 16 proposed Chinook salmon DIT groups (Table 2.1, Appendix H), of which one will be released from the Fraser River, eight from Puget Sound facilities, two from WA coastal facilities, and five from Columbia River facilities.

### Sampling Programs

Assuming recent exploitation rates and sampling programs, the SFEC estimates the proposed MM of Coho stocks in 2012 will result in annual encounters of untagged marked Coho in sampling programs of approximately 1,400 Coho in Alaska (AK) and 7,800 Coho in Canada (Table 2.4). For southern US Chinook stocks, annual encounters of untagged marked Chinook in sampling programs are projected to be approximately 6,500 Chinook in AK, 22,000 Chinook in Canada, and 1,900 Chinook in California (Table 2.4).

Prior to MM, the adipose-fin clip was employed as a visual indicator for fish containing a CWT. Consequently, sampling programs which were designed to collect heads from fish with missing adipose fins resulted in samples of heads, all which contained CWTs. With MM, a large number of marked fish do not contain CWTs; further, CWTs must be recovered from both marked and unmarked fish to obtain data for DIT releases to estimate fishery impacts. Electronic tag detection (ETD) equipment has been developed as a means to efficiently identify marked and

unmarked fish containing CWTs. However, ETD is not employed coastwide because of continuing reservations by some agencies regarding the cost, accuracy, and practical feasibility of incorporating this technology into their sampling programs. The Alaska Department of Fish and Game (ADFG), Canadian Department of Fisheries and Oceans (CDFO), Oregon Department of Fish and Wildlife (ODFW), and California Department of Fish and Game (CDFG) all conduct sampling programs which will not recover the unclipped component of DIT programs that are required to assess impacts of MSFs.

Considering sampling programs coastwide, some agencies already implement comprehensive electronic sampling strategies to recover CWTs from sport and commercial fisheries, while other agencies are still working to increase their use of ETD methods. Washington State continues to fully implement electronic sampling statewide and consistently reports CWT recoveries of unmarked DIT releases in sport marine and some freshwater MSFs, as well as in non-selective fisheries (NSFs). Starting in 2008, Canada also committed to full electronic sampling in all commercial fisheries for Chinook and reporting of all DIT CWTs. Coho in all Canadian commercial fisheries have also been electronically sampled with the exception of the Coho landed by the northern BC 'ice boat' fleet, where visual sampling is used to recover CWTs. In sport fisheries, Canada continues to rely on the Sport Head Recovery Program (SHRP) to recover CWTs from NSFs and MSFs alike and thus, no unmarked DIT recoveries are available from them. Oregon Department of Fish and Wildlife continues to use visual sampling of fall Chinook in the Columbia River and the Oregon (OR.) coast fisheries, also resulting in no recoveries of unmarked DIT groups. However, beginning in 2011, ODFW initiated electronic sampling of the ocean sport and commercial salmon fisheries off the coast of OR. Fisheries from which unmarked DIT recoveries should have been observed create gaps in analyses of fishery impacts on unmarked (wild) fish.

Encounters of large numbers of mass-marked Chinook are increasingly impacting catch sampling programs in northern fisheries, for example, approximately 70% of the Chinook caught in 2011 in the southeast Alaskan troll fishery with a missing adipose fin did not contain a CWT. The increased costs to deal with the additional marked fish (e.g., storage, and shipping to and sorting of heads in the dissection laboratories) are not quantified, but will impact the programs.

## *Summary of 2012 Mark-Selective Fishery Proposals*

MSFs have been prosecuted for Coho since 1998 and for Chinook since 2003. For 2012, the SFEC received 39 MSF proposals for Coho and Chinook salmon in CDFO, WDFW, ODFW, and IDFG fisheries. Fourteen proposals were received for Coho salmon MSFs occurring in 2012 and twenty-five proposals were received for Chinook salmon MSFs. A new proposal from IDFG was received this year for an existing fishery on Snake River fall Chinook. This fishery began in 2009. Otherwise, no new MSFs that had not occurred previously were proposed for 2012. Agencies provided the majority of the requested information in each of the proposals and the proposals were submitted before SFEC met to review the proposals. The SFEC believes these proposals cover all MSFs planned for 2012 of relevance to the PSC. The proposals submitted to the SFEC for review are provided in Table 3.1. Further details describing the proposed MSFs and comments by the SFEC are provided in Table 3.2 and Table 3.3 (also see Appendix F).

Up until 2008, Chinook MSFs were largely restricted to Puget Sound and in the Columbia River. Since then, Chinook MSFs have expanded substantially in marine and freshwater areas. In 2007, 12 Chinook MSFs were prosecuted; in 2010, that number doubled to 24 Chinook MSFs, resulting in a much larger number of indicator stocks vulnerable to being encountered in MSFs.

The majority of current MSF proposals are for terminal marine or freshwater areas, each of which will impact mature fish of one to several stocks. Multiple MSFs for both Coho and Chinook are also expected to occur in ocean areas in BC, WA (WA ocean areas 1 through 4 and the Columbia River), and OR in 2012. These fisheries will impact many stocks and also multiple broods of Chinook. Historical information on encounters of tagged and marked fish in mark-selective fisheries for the run years 2006-2009 for Coho and 2006-2010 for Chinook is provided in Table 3.4 and Table 3.5. In addition, Table 2.4 provides estimates of projected encounters of fish to be mass marked in 2012 in future regional fishery sampling programs. These estimates are based on the number of mass-marked fish proposed to be released by each participating agency.

## *Issues and Concerns*

### Timeliness of Proposals

All requested MM and MSF proposals were submitted prior to the annual meeting of the SFEC in early December, but most of these were not submitted by the deadline of November 1. Receiving the proposals by November 1 would allow the SFEC members time to review them prior to the meeting, enabling members more time during the meeting to prepare timely commentary back to MSF proponents.

### Absence of Post-Season Reports

Post-season reports on MSFs are required for each MSF prosecuted. One of the basic functions of these reports is to provide a record of how fisheries were actually prosecuted (whether they took place) and whether there were any changes relative to the proposal in the way the fisheries and sampling programs were conducted. These reports are to be submitted in the form of three tables (Appendix I). The first two tables should be submitted by the annual PSC post-season meeting following the year of the fishery. No SFEC MSF post-season report/tables were found in the US or Canadian post-season reports (January 2012). Although these SFEC tables are not included in the PSC post-season reports, CDFO and WDFW do provide fishery regulations and preliminary landed catch estimates for mark-selective fisheries in these reports.

### Mixed-Bag Regulations

Regulations to implement MSFs are increasingly complex, making analyses to estimate impacts challenging in a number of ways. Different types of mixed bag regulations are part of the sport MSFs proposed by Canada, Washington, and Oregon. As MSFs expand, a variety of types of mixed bag regulations are being proposed. The regulations include a range of rules that specify when and how anglers may retain various combinations of adult and juvenile marked and unmarked fish in their daily bag limits. The SFEC is not aware of reliable methods for estimating impacts on marked and unmarked fish under mixed bag regulations and the agencies proposing these mixed bag regulations should assist in developing the analytical tools to measure the impacts of these fisheries.

## Recommendations and Issues Requiring PSC Direction

### Proposal Review Process

It is recommended that the PSC request agencies to submit proposals for all potential 2013 MSF and MSF's by the first of November 2012, and for agencies to provide both preliminary and final post-season reports on the conduct of MSF's within the timeframe adopted by the PSC. Agencies need to prioritize these tasks so that proposals and MSF post-season reports are completed and submitted in a timely manner.

### Interagency Coordination and Cooperation

Mass marking, double-index tagging, and CWT sampling programs are not sufficiently coordinated to support analysis by PSC technical committees. It is also not clear that agencies are collecting adequate data needed to permit estimation of unmarked CWT recoveries in fisheries and escapements so that cohort reconstructions can be carried out on unmarked DIT releases. With the expansion of Chinook marine MSF's, the geographical range of electronic CWT sampling needs to be expanded and the number of DIT stocks needs to be increased. Specifically, electronic tag detection needs to be implemented by ODFW for OR Columbia River fall Chinook fisheries and escapement to recover DIT's for Chinook indicator stocks. In addition, DIT groups should be added for the following stocks:

Chinook stocks proposed for DIT releases:

- Columbia River summers (Wells Hatchery);
- Lower Columbia River tule fall Chinook (possibly Washougal);
- Snake River fall subyearlings (Lyons Ferry Hatchery);
- Willamette Spring (reinstate DIT program with electronic terminal sampling);
- North Oregon Coast (Salmon River); and,
- Mid Oregon Coast.

Proposed changes in Coho DIT releases:

- USFWS Eagle Creek – increase DIT release group size from 25,000 to the standard 50,000.

The PSC should continue to support technical and policy processes to develop agreements to clarify responsibilities for maintaining a functional CWT system; these processes should build upon recommendations presented by the CWT Work Group in 2008.

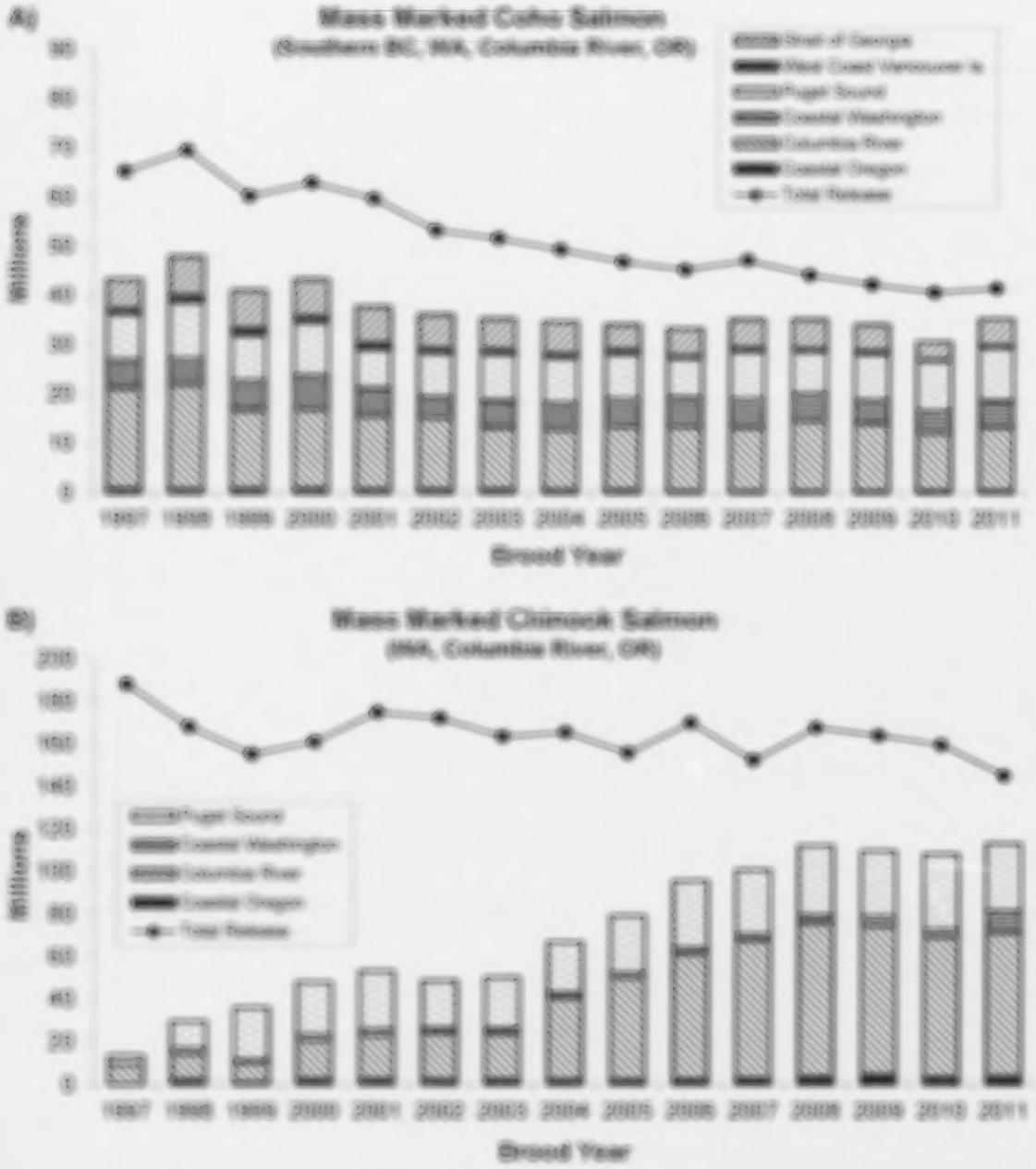



Figure 2.1 Number of mass marked Coho (panel A) and Chinook salmon (panel B) released by region and brood year, 1997-2011. The solid line represents total hatchery releases by brood year with the exception that fry releases of Coho are not included. Values used for brood years 1997-2010 are actual release sizes, values for brood year 2011 are proposed release sizes.

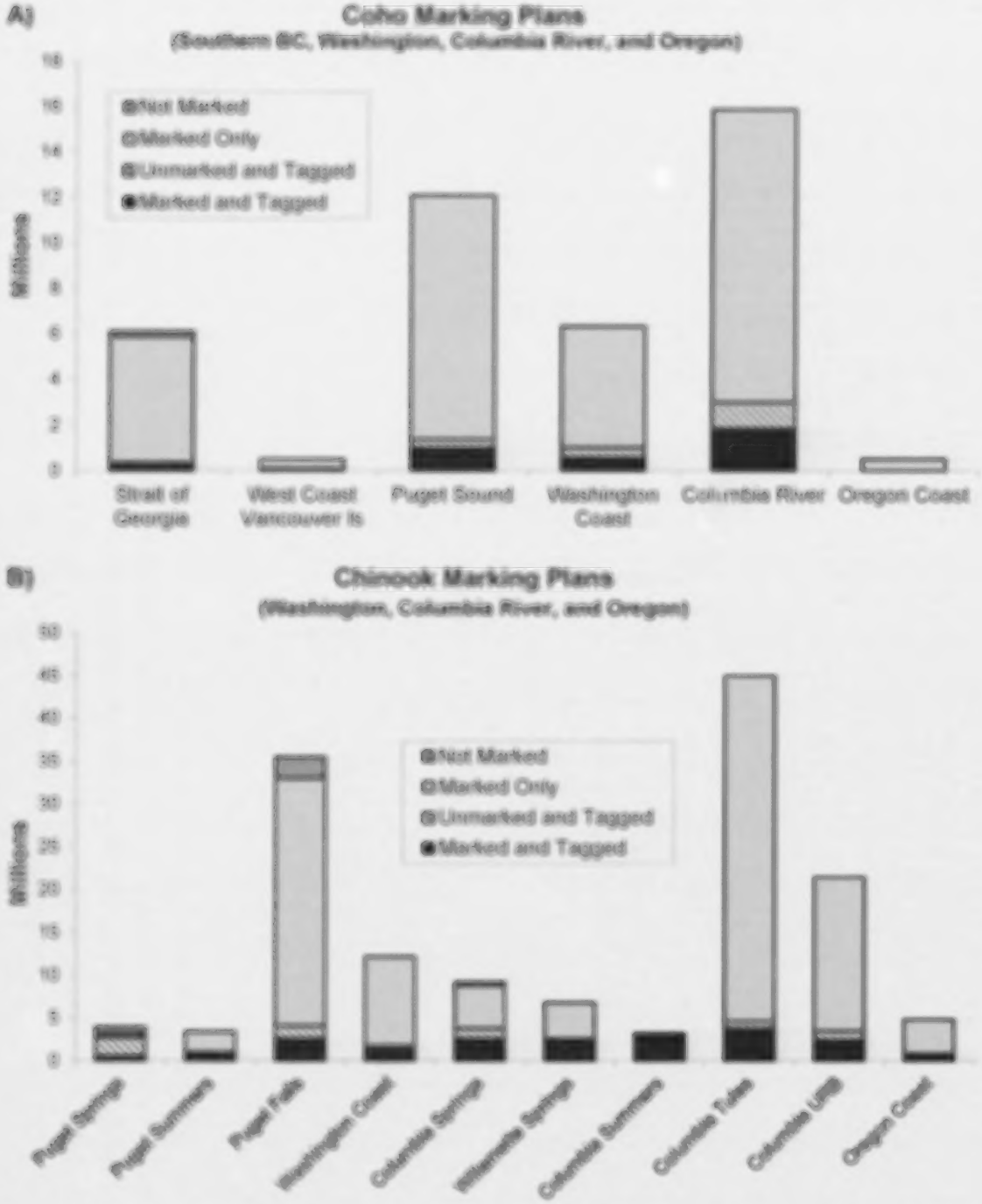



Figure 2.2. Projected Coho (panel A) and Chinook (panel B) salmon releases for brood year 2011, by region and mark status.

## *2.4 Fishery and Escapement Sampling Methods*

### 2.4.1 Current Agency Sampling Methods

Two methods are currently used to detect fish containing CWTs. The traditional visual sampling method relies upon the adipose-fin clip as a visual indicator for a CWT. When visual sampling is used, only CWTs from marked fish will be detected. Electronic tag detection (ETD) uses electronic gear (hand-held wand or fixed-position tube) to detect CWTs in marked and unmarked fish. When marked fish are first visually separated in the sample and electronic gear is then used to detect tags in the marked fish, this is considered visual sampling because tags are only recovered from marked and tagged fish. Visual sampling results in a lack of recovery of the unmarked component of DIT release groups, creating data gaps in the analysis of CWT data and increased uncertainty in the estimated impacts on unmarked (wild) fish. These gaps also require indirect estimation procedures to complete them thus making analyses more time consuming and the results more uncertain.

Current coded-wire-tag sampling methods for Coho and Chinook are summarized in Table 2.2 and Table 2.3, respectively. Electronic tag detection has not been implemented for all fisheries encountering mass-marked fish. In general, ETD has become the standard CWT sampling method in WA and ID. Visual CWT sampling remains the standard method in AK and CA. In BC and OR the situation is more complex, where sampling methods depend on species, location, and the type of fishery.

Alaska Department of Fish and Game has no plans to convert to ETD sampling although concerns remain about the large numbers of clipped fish without CWTs encountered in sampling programs. Of the marked Chinook caught in Alaska's troll fishery since the implementation of MM, the proportion of fish with no tags has increased from approximately 7% to 70% (Figure 2.3). The increased cost to deal with the additional marked fish is not quantified, but impacts the program. Costs to ship all the heads, including those with no CWTs, from sampling locations to the dissection lab are substantial.

California does not employ ETD. However, approximately 270 mass-marked Coho and 1,900 mass-marked Chinook are projected to be encountered in CA (Table 2.4) sampling programs, which could negatively impact their programs.

Canada relies on voluntary recoveries (SHRP) of marked Coho and Chinook in sport fisheries (regardless of whether mark-selective or non-selective regulations are used), while the current restricted commercial fisheries are electronically or visually sampled depending on species and location. As in AK, Canada's SHRP has seen an increase in the submission of heads without tags. In addition, they have seen a decrease in the submission rate of heads as fewer anglers turn in heads. Since 2008, Coho landed by 'ice' or 'day boats' in the northern BC troll fishery are not subject to electronic sampling. In that fishery, Coho are sampled visually and CWTs from marked fish only are recovered. Electronic sampling is being used for both species in commercial fisheries South of Cape Caution, located just northward of the northern tip of Vancouver Island on the mainland coastline.

Coded-wire-tag sampling in Oregon hatcheries is predominantly electronic; however CWT sampling at most freshwater traps and on spawning grounds remains visual. Since 2011, ETD has been used to CWT sample both the sport and commercial troll Chinook and Coho fisheries that occur off the coast of Oregon. However, the impacts of large abundances forecasted for Sacramento and Klamath River fall Chinook combined with the 25% fractional marking program in CA could affect proposed electronic sampling of the commercial troll fisheries when high-volume loads are encountered by samplers.

The Oregon ocean sport Chinook fishery is non-selective with the exception of a small area adjacent to Tillamook Bay which is mark-selective prior to August 1. The majority of the sport Coho fishery is mark-selective; however a limited non-selective quota fishery occurs in September from Cape Falcon to Humbug Mountain. Oregon's ocean commercial troll fishery is non-selective for Chinook and mark-selective for Coho North of Cape Falcon. From Cape Falcon southward to the OR/CA border, the commercial Chinook fishery is non-selective with the exception of a small area adjacent to Tillamook Bay which is mark-selective prior to August 1. Coho retention in the commercial troll fishery is prohibited from Cape Falcon to the OR/CA border.

Columbia River sport and commercial fisheries are electronically sampled for spring and summer Chinook (January-July) and also Coho. Fall Chinook (August-October) fisheries (commercial and sport) are visually sampled (only adipose-clipped fish are wanded to determine if CWT present), except for the Buoy 10 sport fishery in the estuary where electronic sampling has been used in recent years.

Table 2.2. Proposed fishery sampling methods for tagged Coho salmon in 2012.

| Region | Fishery | Type of Sampling | Comments |
|---|---|---|---|
| Alaska | Commercial<br>Sport | Visual<br>Visual | |
| Northern BC | Commercial<br><br><br><br>Sport | Visual<br><br><br><br>Voluntary (Visual) | Some terminal areas are not sampled. Coho catches on ice boats are only sampled if Chinook are in the catch (most of the time).<br>Anglers are encouraged to turn in heads from marked Coho only; therefore, tag recoveries of unmarked Coho are not expected (fisheries are non-selective). |
| West Coast Vancouver Island | Commercial<br><br>Sport | Electronic<br><br>Voluntary (Visual) | Incidental recoveries in fisheries on other species; non-retention of unmarked Coho.<br>Anglers are encouraged to turn in heads from marked Coho only; therefore, tag recoveries of unmarked Coho are not expected (fisheries are mostly mark-selective). |
| Strait of Georgia | Commercial<br><br>Sport | Electronic<br><br>Voluntary (Visual) | Incidental recoveries in fisheries on other species; non-retention of unmarked Coho.<br>Anglers are encouraged to turn in heads from marked Coho only; therefore, tag recoveries of unmarked Coho are not expected (fisheries are mostly mark-selective). |
| Puget Sound | Commercial<br>Sport | Electronic<br>Electronic | |
| Washington Coast | Commercial<br>Sport | Electronic<br>Electronic | |
| Oregon Coast | Commercial<br><br><br><br>Sport | Electronic<br><br><br><br>Electronic | The only commercial Coho fishery on the Oregon coast proposed to occur is North of Cape Falcon and is mark-selective; therefore, recoveries of unmarked Coho are not expected.<br>The ocean sport fishery is mark-selective except for a non-selective season during the first few weeks of September. Tag recoveries from unmarked Coho are anticipated in September. |
| Columbia River | Commercial<br>Sport | Electronic<br>Electronic | |
| California | Commercial<br>Sport | Visual<br>Visual | |

Table 2.3. Proposed fishery sampling methods for tagged Chinook salmon in 2012.

| Region | Fishery | Type of Sampling | Comments |
|---|---|---|---|
| Alaska | Commercial<br>Sport | Visual<br>Visual | |
| Northern BC | Commercial<br><br><br>Sport | Electronic<br><br><br>Voluntary (Visual) | All Chinook are now electronically sampled and all tags are decoded (this has been the case since 2007).<br>Anglers are encouraged to turn in heads from marked Chinook only; therefore, tag recoveries of unmarked Chinook are not expected. |
| West Coast Vancouver Island | Commercial<br>Sport | Electronic<br>Voluntary (Visual) | Anglers are encouraged to turn in heads from marked Chinook only; therefore, tag recoveries of unmarked Chinook are not expected. |
| Strait of Georgia | Commercial<br>Sport | Electronic<br>Voluntary (Visual) | Anglers are encouraged to turn in heads from marked Chinook only; therefore, tag recoveries of unmarked Chinook are not expected. |
| Puget Sound | Commercial<br>Sport | Electronic<br>Electronic | |
| Washington Coast | Commercial<br>Sport | Electronic<br>Electronic | |
| Oregon Coast | Commercial<br>Sport | Electronic<br>Electronic | |
| Columbia River | Commercial<br><br><br><br>Sport | Electronic/Visual<br><br><br><br>Electronic/Visual | Spring and Summer Chinook fisheries are electronically sampled. Fall Chinook are visually sampled. CWTs from unmarked Chinook from other regions will not be recovered.<br>Spring and Summer Chinook fisheries are electronically sampled. Fall Chinook are visually sampled, except for the Buoy 10 fishery which is electronically sampled. CWTs from unmarked Chinook from other regions will not be recovered, except for the Buoy 10 fishery |
| California | Commercial<br>Sport | Visual<br>Visual | |

Some controversy remains regarding the reliability of wands for detecting CWTs in Chinook. Canadian Department of Fisheries and Oceans has adopted a policy of not using wands in either fishery or escapement sampling except when a tube detector fails or a Chinook is too large to pass through the tube detector. Canadian Department of Fisheries and Oceans carried out a blind study over a 2-year period in the Fraser River Albion Chinook test fishery with trained staff using hand-held wands and found that CWTs were missed when actually present and detected when not present at a rate significantly greater than expected by chance (Parken and Riddell 2007). Most importantly, missed detections and false detections occurred at higher rates in unmarked fish compared to marked fish. However, the results of the Canadian study contradict all other previous blind studies testing the efficacy of wands in detecting CWTs in Chinook, where detection rates ranged from 91 to 99% (Olson 2007). The difference in the results of these studies is disconcerting, and it has yet to be determined whether this difference is due to sampling technique or equipment.

The manufacturer of the wands (Northwest Marine Technology, Inc.) has the ability to test and increase the detection range of wands to a new minimum standard (3.2 cm). Wands that meet this new standard are marked with a silver battery cap. The Northwest Indian Fish Commission (NWIFC) conducted a field test of these newer wands on returning Chinook at three hatcheries in the fall of 2010. The study found high detection rates (99% for all samples combined) with just external wanding of the fish. In addition, some of the missed tags were detected with subsequent wanding in the mouth. Therefore, the technique of "mouth wanding" (wanding the fish both externally on the snout and inside the mouth on the palate) is still recommended when using these wands. In November of 2011 NMT announced the development of a new type of wand, the "T wand". These wands are even more sensitive with a detection range of 5.5 cm. These wands are now being produced and should eliminate the need for mouth wanding.

### 2.4.2 Estimated Sampling Encounters

A summary of projected mass-marked Coho and Chinook salmon that may occur in agency CWT sampling programs is provided in Table 2.4.

**Coho Salmon**

Planned MM in 2012 will likely result in estimated future encounters of approximately 1,400 untagged and marked recoveries in AK and approximately 270 encounters of untagged and marked Coho salmon in CA – the two geographical areas where Coho are not mass marked or electronically sampled. It is also projected that approximately 6,600 untagged and mass-marked Coho recoveries will occur in Canadian fisheries that rely on visual sampling methods.

**Chinook Salmon**

Planned MM of southern US Chinook stocks will result in estimated mass-marked encounters of approximately 6,500 Chinook in AK, 22,000 Chinook in Canada, and 1,900 Chinook in CA, assuming recent exploitation rates and sampling programs. We emphasize these regions because agencies in these areas rely partially or completely on visual sampling to recover CWTs (Table 2.3). For example, in Alaskan troll fisheries where visual sampling is employed the proportion of marked Chinook salmon encountered that is untagged has been much greater in recent years (Figure 2.3).

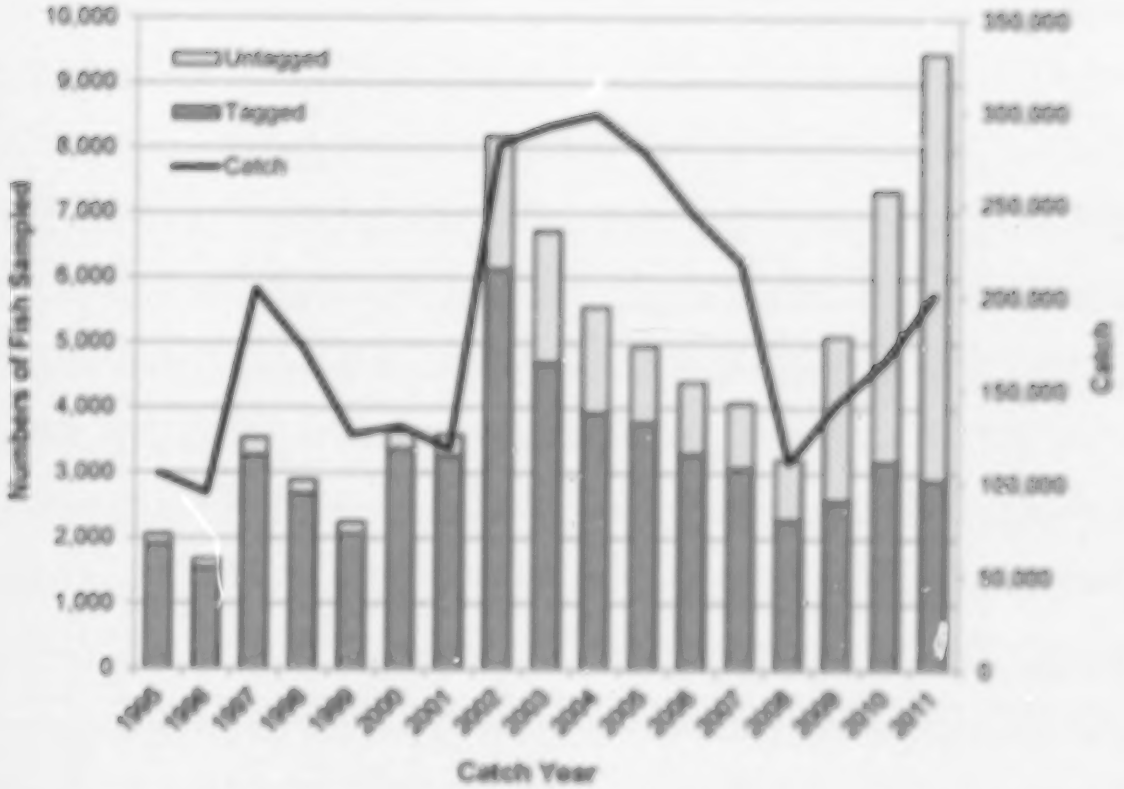



Figure 2.3. Numbers of marked Chinook salmon sampled in Alaska's troll fishery by untagged and tagged status, with catch numbers, catch years 1995-2011.

Table 2.4 Numbers of mass-marked Coho and Chinook projected to be encountered in future CWT sampling programs (actual number of fish encountered in samples will depend on survival rates, exploitation rates, and sampling rates). For this analysis, CWT recoveries from the following brood years were used: 2003-2005 for Coho and 2001-2003 for Chinook. Tribal hatchery mass-marked production in WA is included in the WDFW numbers.

| Species | Area/Basin | | Agency | 2012 MM | Estimated Encounters in Future Fishery Sampling Programs | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Alaska | | NBC | | SBC | | WA (CST Pt) | | Columbia R. | | OR Coast | | California | |
| | | | | | Com | Spt | Com | Spt | Com | Spt | Com | Spt | Com | Spt | Com | Spt | Com | Spt |
| Coho | Strait of Georgia | | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | NW Coast of Vanc. Island | | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | Puget Sound | | WDFW | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | | | USFWS | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | WA Coast | | USFWS | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | | | WDFW | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | OR Coast | | ODFW | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | Columbia River | | USFWS | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | | | WDFW | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | | | ODFW | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | | | Total | [illegible] | [illegible] | | [illegible] | | [illegible] | | [illegible] | | [illegible] | | [illegible] | | [illegible] | |
| Chinook | Puget Sound | Spring | WDFW | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | | Summer | WDFW | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | | Fall | WDFW | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | WA Coast | Spr/Sum | WDFW | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | | Fall | USFWS | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | | | WDFW | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | OR Coast | N. Spr | ODFW | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | | S. Spr | ODFW | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | | Fall | ODFW | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | Columbia River | Spring | ODFW | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | | | WDFW | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | | Fall/Late | USFWS | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | | | WDFW | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | | | ODFW | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | | URB | ODFW | [illegible] | encounters included with ODFW tule fall | | | | | | | | | | | | | |
| | | | USFWS | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | | | WDFW | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | Nooksack River | Fall | ODFW | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | | | ODFG | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | | Spring | ODFW | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | | | Total | [illegible] | [illegible] | | [illegible] | | [illegible] | | [illegible] | | [illegible] | | [illegible] | | [illegible] | |

# 3 Review of West Coast Energy Proposals

In 2009, the WFOC simplified the format of the template for WEF proposals to focus on the description of the fishery and the sampling plan and to classify the shorts likely to be impacted by the fishery (see templates in Appendix C and Appendix D). The information in the provided in the proposal template is required to estimate exemptions of protected fish

## 3.1 West Coast Fishery Proposals Received

Work-selective fisheries have been processed for C-dia since 1998 and for C-bimodi since 2001 (Table 1-1, Appendix F). For the 2012 fishery season, the WFOC received a total of 24 WEF proposals for C-dia and C-bimodi salmon in 6 DFO, WDFW, ODFW, and IDFG fisheries. these are summarized in Table 1-2 and Table 1-3. Agencies provided the majority of the requested information in each of the proposals and the proposals were submitted in time for the annual review meeting by the WFOC. There was complete submissions of WEF proposals for the third time, and it appears that the process established by the PSC for obtaining proposals is now working as intended. The number of WEF appears to be reaching a plateau, two former C-dia WEF proposals were dropped in 2012 (one each WEF on the Snohomish River and Puget Sound and a commercial WEF in Grays Harbor), and there was only one new proposal for C-bimodi WEF, which was the first proposal WFOC has received from IDFG for a Snake River fall C-bimodi salmon WEF. Mixed bag regulations were again proposed for several of the WEFs (e.g. Oregon sport marine and freshwater fisheries and Canadian marine sport fisheries).

### 3.1.1 C-dia Salmon WEFs

Fourteen proposals were received for C-dia salmon WEFs occurring in 2012 (Table 1-1, Table 1-2). The WFOC received four proposals from ODFW for ongoing C-dia WEFs in Canadian waters, including two in the Lower Fraser River and two in southern BC, each proposal contained a variety of fishery openings distinguished by regulatory variations. There were eight WEF proposals from WDFW, all from ongoing fisheries. Of the eight proposals, three were for freshwater locations and five for marine waters. WFOC believes that proposals have now been submitted for all ongoing C-dia WEFs in WDFW. Six of the fisheries have been occurring since 1998, and two since 2010. Further, WFOC received one ODFW/WDFW joint C-dia WEF proposal for the Columbia River; this is an ongoing sport fishery in the lower river that began in 1998. Additionally, one C-dia WEF proposal was received from ODFW for the OR coast, an ongoing fishery since 2003.

### 3.1.2 C-bimodi Salmon WEFs

Twenty-five proposals were received for C-bimodi salmon WEFs in 2012 (Table 1-1, Table 1-3). These included one proposal from Canada (CDFO), 17 from Washington (WDFW), four submitted jointly by Oregon and Washington (ODFW and WDFW), two from Oregon (ODFW), and for the first time, one from Idaho (IDFG). The proposed Canadian fishery is located in the Strait of Juan de Fuca estuaries. Of the 17 WDFW proposals, the number of proposals per WDFW location were as follows: six in the freshwater systems of Puget Sound, two in Puget Sound marine waters, one in the marine waters of the WA coast, three in Willapa Bay, or its tributaries, two in WA coastal river systems, two in the Snake River, and one in the Columbia River. Starting in 2012, WDFW's proposals for C-bimodi sport WEFs in Puget Sound marine areas 5-13 were consolidated into one overall summer WEF proposal (WDFW-11).

[illegible] [illegible] proposals (S and T), see Table 1-1 and see overall review IEEE proposal [illegible] IEEE 802[illegible]/D, maintain proposal (S), see Table 1-1 S. In addition, four (4) [illegible] IEEE proposals were submitted (IEEE 802[illegible] and IEEE 802[illegible]) by Alabama pursuant to the (1) regarding [illegible] of Many, three proposals were for ongoing (IEEE standard) provided [illegible]. The fourth (one IEEE 802[illegible] 802[illegible] proposal was for a (pre) IEEE, as IEEE Standard proposals would add draft, can move, IEEE that was possibly not anticipated for the first time in 1[illegible]. It is not clear to the IEEE whether there are additional IEEE proposed in the (1) deadline for or for which proposals were not received. Also, Rutgers submitted six proposals for ongoing (Proposal IEEE), one to the 3rd Meeting for or standard to IEEE and one (2) the Rutgers notice standard to IEEE. Lastly, the the First time Dallas submitted one proposal for a (pre) IEEE, as the Trade for or ongoing Standard, IEEE Proposal.

Table 1-1 Status of each network's Ordinary IEEE proposals, Ordinary implementations, and good Ordinary signaling for years 2001 through 2012

"P" indicates the IEEE proposal was submitted to the PND IEEE for the requirement deadline. "I" indicates the IEEE was conditionally. "S" indicates the good network report summarizing IEEE results was submitted successfully to the PND IEEE. An "(P)" above a standard indicates that the good network IEEE report is still outstanding (i.e., IEEE has not yet issued the report). An "I" indicates that a IEEE proposal was not submitted to IEEE. If no statement is in the IEEE was not conducted standard statement. Finally, "-" indicates the IEEE was neither proposed nor conducted in a given year.

| Ordinary Name<br>IEEE Proposal No. | Year | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
| Proposing Standard Use | | | | | | | | | | |
| [illegible] | P/S | P/S | P/S | P/S | P/S | P/S | P/S | P/S | P/S | P |
| [illegible] | - | P/I | P/S | P/S | P/S | P/S | P/I | P/S | P/S | P |
| [illegible] | - | - | - | P/S | P/S | P/S | P/S | P/S | P/S | P |
| [illegible] | P/S | P/S | P/S | P/S | P/S | P/S | P/S | P/S | P/S | P |
| [illegible] | P/S | P/S | P/S | P/S | P/S | P/S | P/S | P/S | P/S | |
| [illegible] | P/S | P/S | P/S | P/S | P/S | P/S | P/S | P/S | P/S | P |
| [illegible] | P/S | P/S | P/S | P/S | P/S | P/S | P/S | P/S | P/S | P |
| [illegible] | P/S | P/S | P/S | P/S | P/S | P/S | P/S | P/S | P/S | P |
| [illegible] | P/S | P/S | P/S | P/S | P/S | P/S | P/S | P/S | P/S | P |

[illegible] [illegible] see the first one has IEEE Rutgers supporting proposals more generic. Some Cities were [illegible] Alabama Rutgers as well, as Dallas.

Table 3.2 Summary description of Coho mark-selective fisheries proposed for the 2012 fishery season, for which proposals were submitted by agencies in 2011.

| Location (Proposal ID) | Fishery Type and Period | Regulations | Sampling | Stocks Impacted | Comments and Concerns | Methods of Estimation |
|---|---|---|---|---|---|---|
| DC Management Areas 19-28, outer areas of 029-027 (MSF-#10C-02)) | Sport<br><br>Coastal waters June 1 to December 31<br><br>Fraser River Mid-October to December 31 | Daily bag limit of 2 (up to 4) marked Coho greater than 30 cm fork length. Barbless hooks. More regulations depend on maximum ER for interior Fraser River Coho. May have mixed bags | CWTs obtained through voluntary sport head recovery program | Late-timed Coho recoveries in 2000-2008 DIT stocks indicated | Voluntary recovery program will not provide recoveries of unmarked and tagged fish. these would be few, as unmarked fish would only be returned in error (non-compliance) except for fisheries with mixed bag limits. | Total catch using creel surveys and log books from lodges. Expansions are completed for areas/times not sampled. CWT estimates depend on awareness factors. |
| DC Management Areas 25-27, 029-027 (MSF-#10C-03)) | Commercial<br><br>September to October | Retention of marked Coho allowed in a Chinook targeted fishery. | Sampled electronically for CWTs | Tagged stocks and DIT groups listed | | Total catch is from logbooks. |
| Fraser River (MSF-#10C-05) | First Nations<br><br>October to November | Gillnet and beach seines. Chum and Pink targeted fishery. Live wild Coho must be released | No sampling | List of tagged stocks. Inch Creek is a DIT | No sampling for CWTs is planned. Numbers of marked and unmarked are reported in some fisheries. Visual sampling only.<br><br>Inch Creek is a DIT program. There should be an analysis evaluating how many marked DIT fish are taken in these fisheries. This analysis would provide information on impacts on Inch Creek DIT in the sport and First Nations fisheries. | Catch estimate method unknown.<br><br>CWT estimates cannot be made |

Table 3.2. (Continued) Summary description of Coho mark-selective fisheries proposed for the 2012 fishery season, for which proposals were submitted by agencies in 2011.

| Location (Proposal ID) | Fishery Type and Period | Regulation | Sampling | Stocks Impacted | Comments and Concerns | Methods of Estimation |
|---|---|---|---|---|---|---|
| Fraser River (MSF-FOC-06) | Sport<br><br>Table shows periods by specific area. | Daily limit varies by time and area. Two per day or 4 per day, only two marked >35 cm. | Voluntary and creel | Coldwater, Salmon (Thompson), Dunn /Louis /Lemieux, Inch Cr. (DIT), Salmon R., other South Coast and US stocks. | Creel surveys and awareness factors for some times and areas, but no CWT sampling. Voluntary returns of CWTs. Need an analysis to evaluate how many marked DIT fish taken. | Creel survey is a roving survey, with incomplete trip angler interviews.<br><br>CWT estimates require awareness factor. |
| Washington Puget Sound Areas 5,6, 7, and 13 (MSF-WDFW-07) | Sport<br><br>July to September | Release unmarked Coho, no minimum size limit. | Dockside sampling for CWTs, with ETD. Visual for mark rates. | All CWT indicator stocks from Puget Sound and southern BC. | | Catch estimates from catch record cards available November of following year. In-season creel estimates are available for Area 5. |
| Washington Ocean Areas 1-4 (MSF-WDFW-06) | Sport<br><br>July to September | Two per day, Release unmarked Coho. Minimum size limit 16" total length. | See WDFW Ocean Sampling Program Operating Plan. | All PSC CWT indicator stocks, primarily Columbia R. | | Effort-CPUE from angler interviews, stratified by charter/private and weekday/ weekend. Mark rates from charter ride-alongs. |
| Washington Ocean Areas 1-4 (MSF-WDFW-15) | Commercial<br><br>July to September | Release unmarked Coho, minimum size 16". | Dockside sampling for CWTs. | All CWT indicator stocks from Washington and southern BC. | Need information comparing mark rates between troll and sport fishery. | Catch estimates from fish tickets. Mark rates from sport fishery used for troll fishery. |

Table 3.2. (Continued) Summary description of Coho mark-selective fisheries proposed for the 2012 fishery season, for which proposals were submitted by agencies in 2011.

| Location (Proposal ID) | Fishery Type and Period | Regulation | Sampling | Stocks Impacted | Comments and Concerns | Methods of Estimation |
|---|---|---|---|---|---|---|
| Quillayute River (MSF-WDFW-31) | Sport February 1 to December 31 | Minimum size limit of 12". Bag limit of 6 salmon. Feb 1-Aug 31: up to 2 adult marked. Sep 1-Dec 31: up to 2 adult unmarked and 2 adult marked. | CWT sampling of escapement, but not fishery. | Sol Duc Hatchery (DIT) | Mixed bag will cause problem in estimating CWT composition of mortalities. | Catch is estimated using catch record cards. Mark rate from commercial fishery. CWTs estimated using tag ratios from tribal net fishery. |
| Grays Harbor Area 2.2 (MSF-WDFW-23) | Sport September 16 to October 7 | Daily limit 3, of which only 1 may be Chinook and 2 may be unmarked Coho. Release Chum. Minimum size limit of 12". | Dockside sampling for CWTs. | Skookumchuck Bingham Creek (DIT), Satsop Springs (DIT), Lake Aberdeen, Mayr Bros, and Humptulips hatcheries. | Mixed bag will cause problem in estimating CWT composition of mortalities. | Total catch is estimated from catch record cards. Estimate mark rate from VTRs and commercial fishery. CWT estimates depend on tag ratios from commercial fishery. |
| Grays Harbor Tributaries (MSF-WDFW-24) | Sport October 1 to January 31 | Daily limit of 6. Up to 2 adults may be retained; of which only 1 may be unmarked Coho. Release Chinook and Chum. Minimum size limit of 12". | No sampling for CWTs. | Skookumchuck, Bingham Creek (DIT), Satsop Springs (DIT), Lake Aberdeen, Mayr Bros, and Humptulips hatcheries. | Mixed bag will cause problem in estimating CWT composition of mortalities. | Total catch is estimated using catch cards. Mark rates from estimates of total escapement. CWT estimates depend on tag ratios and total escapement estimates. |

Table 3.2. (Continued) Summary description of Coho mark-selective fisheries proposed for the 2012 fishery season, for which proposals were submitted by agencies in 2011.

| Location (Proposal ID) | Fishery Type and Period | Regulation | Sampling | Stocks Impacted | Comments and Concerns | Methods of Estimation |
|---|---|---|---|---|---|---|
| Willapa Bay Tributaries (MSF-WDFW-22) | Sport<br><br>August 1 to January 31 | Daily limit of 6, of which 3 adults may be retained. Release unmarked Chinook, unmarked Coho, and Chum. Minimum size limit of 12". | Sept: Dockside sampling for CWTs. | Willapa (Forks Cr), Nemah, Naselle | Willapa (Forks Cr), Nemah, Naselle | Catch estimates from catch record cards. Mark rates from estimates of escapement. CWT estimates depend on tag ratios and escapement estimate. |
| Willapa Bay MA 2.1 (MSF-WDFW-29) | Sport<br><br>August 1 to January 31 | Daily limit of 6. Up to 3 adults may be retained. Release Chum and unmarked Chinook. Minimum size limit of 12". From June 9-July 31, regulations concurrent with the ocean fishery (Area 2). | Dockside sampling for CWTs and VTRs. | Willapa (Forks Creek), Nemah, Naselle | Mixed bag will cause problems in estimating CWT composition of mortalities. | Catch estimates from catch record cards. Mark rates from VTRs and commercial fishery. CWT estimates depend on tag ratios from commercial fishery. |
| Lower Columbia River (MSF-ODFW / WDFW-04) | Sport<br><br>August 1 through December 31 | Marked only.<br>August 1-31: Bag limit of 1.<br>September 1-30: Bag limit of 2.<br>October 1-December 31: Bag limit of 6, up to 2 adults.<br>Minimum size limit of 16" for August-September, 12" for October-December. | Creel survey with CWT sampling. | Big Creek, Grays, Elochoman, Cowlitz, Kalama, Toutle, Lewis, Washougal, Sandy, and Klickitat Rivers, Eagle Creek, and Bonneville Hatchery | Mixed bag will cause problem in estimating CWT composition of mortalities. | Total catch is estimated using creel survey. Effort is estimated with aerial surveys, CPUE is estimated from angler interviews. |
| Oregon coast from Leadbetter Pt to California (MSF-ODFW-03) | Sport<br><br>June 20 to December 31 | Mixed bag; 1-3 salmon/steelhead (depending on area) per day (Chinook>24 in., Coho >16 in., steelhead > 20 in.). Only marked Coho, with no seasonal limit. Up to 2 adult Chinook depending on date and area. Regulations do not apply to Chinook jacks (15-24"). | Creel survey. Visual tag detection. | Stocks from BC, Puget Sound, Washington, Columbia R, and Oregon coast are all taken. | No VTR, test fishery or onboard observers for mark rates. | Effort estimated using boat counts and CPUE estimates from angler interviews. |

Table 3.3 Summary description of Chinook mark-selective fisheries proposed for the 2012 fishery season, for which proposals were submitted by agencies in 2011.

| Location | Fishery Type and Period | Regulation | Sampling | Indicator Stocks Impacted | Comments and Concerns | Methods of Estimation |
|---|---|---|---|---|---|---|
| Int. Strait of Juan de Fuca and WCVI, Areas 19-1 to 6, 18-4 and 20-5 (MSF-FOR-07) (Note: Juan de Fuca only proposed fishery location in 2012.) | Sport (hatchery hooks)<br><br>June 1 to 18 | Daily limit of 2 marked or unmarked between 47-67 cm or 2 marked > 67 cm | Voluntary CWT recovery program.<br><br>Creel survey and lodge log books for catch data. | Table provided of tagged groups impacted. | There will be a problem in estimating CWT composition of unmarked mortalities due to mixed bag (slot limit type) regulations. | Total catch and mark rates by size category estimated from creel surveys and lodge log books.<br>Effort/CPUE estimate: Effort is estimated from aerial surveys and CPUE is derived from complete trip (or exit) interviews. |
| Nooksack River (MSF-WDFW-13) | Sport<br><br>September 1 to December 31 (Chinook MSF: Sept 1-31) | Daily bag limit of 2 salmon plus 2 additional Coho; release unmarked Chinook, Sept 1-31<br>Minimum size 12" | No sampling | Summit tagged fall Chinook are taken in this fishery. | | Estimate number of Summit fall Chinook using % hatchery from spawning grounds and log runs from hatchery. |
| Upper Skagit River (MSF-WDFW-12) | Sport<br><br>June 1 to July 15<br>Upper Skagit River, from the Highway 530 bridge at Rockport to the mouth of the Cascade River (RM 67.1-78.1); and, the lower Cascade river, from the mouth to the Rockport to the Cascade road bridge (RM 0.0-0.9). | Minimum size limit of 12". Daily bag limit of 4 marked Chinook only, up to 2 may be adults (>24"). Night closure and anti-snagging rule. | Creel survey with CWT sampling and LTD. | Skagit Spring Chinook (DIT); Skagit Summer Chinook.<br>NF Nooksack Spring Chinook. | | Catch estimate from creel survey and CWTs.<br>Effort/CPUE using effort from trailer and boat counts and CPUE from angler interviews.<br>Auxiliary boat surveys used to expand trailer and boat counts for effort. |

Table 3.1 (Continued) Summary description of Chinook troll salmon fisheries proposed for the 2012 fishery season. Six vessels proposals were submitted by agencies in 2011.

| Location | Fishery Type and Period | Regulations | Sampling | Indicator Stocks Impacted | Comments and Concerns | Northern Boundary |
|---|---|---|---|---|---|---|
| [illegible] | Open<br><br>June 1 to July 15 | Minimum size limit of 12". Bag limit of 2 salmon per day, mouthed Chinook only. Night closure and non-retaining rule. | 2 port samplers, depending on funding, including 2 WDFW sampling cruises | [illegible] | | [illegible] |
| Puget Sound W.A. [illegible] (WDFW 12) | Open<br><br>May or September | Daily bag limit of 2 mouthed salmon. 2 Chinook minimum size limit of 22" | Dockside angler interviews to estimate catch and harvest, to collect [illegible] data. Hook-and-release mort.s 5.5%. | All Puget Sound Stocks for [illegible] | This fishery will require 100 logged CWT [illegible] to estimate fishery impacts. CWT recovery data are also required to [illegible] | [illegible] |
| Puget Sound W.A. [illegible] (WDFW 12) | Open<br><br>October to April | Daily bag limit of 2 mouthed salmon. 2 Chinook minimum size limit of 22" | Dockside angler interviews to estimate catch and harvest, to collect [illegible] data. Hook-and-release mort.s 5.5%. | All Puget Sound Stocks for [illegible] | This fishery will require 100 logged CWT [illegible] to estimate fishery impacts. CWT recovery data are also required to [illegible] | [illegible] |

Table 2.1.1 [illegible]

| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
|---|---|---|---|---|---|---|
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |

Table 3.3. (Continued) Summary description of Chinook mark-selective fisheries proposed for the 2012 fishery season, for which proposals were submitted by agencies in 2011.

| Location | Fishery Type and Period | Regulation | Sampling | Indicator Stocks Impacted | Comments and Concerns | Methods of Estimation |
|---|---|---|---|---|---|---|
| Ocean Areas 1-4 (WDF-WDFW-09) | Sport<br><br>May through June | Daily bag limit of 2 salmon per day. Release unmarked Chinook. Minimum size of 24" total length. | Creel survey and charter boat observers (mainly in Areas 1 and 2) and VTRs | All indicator stocks listed in the Appendix II table are expected to be encountered | | Creel survey is an effort/CPUE survey with boat exit counts and exit interviews. Stratified by boat type (private or charter boats) and day type (weekend or weekdays) |
| Quillayute River system (Bogachiel R., Calawah R., Dickey R., Quillayute R., Sol Duc R.) (WDF-WDFW-32) | Sport<br><br>February 1 through December 31 | Daily bag limit of 6. Up to 2 adults may be retained. Release unmarked adult Chinook. Minimum size limit of 12". | No sampling | Sol Duc Hatchery - WDFW/Salmon River Hatchery - QIN<br>Queets is a DIT | Lack of direct sampling. Tribal CWT data needs to be brought up to date. | Catch from catch record cards and CWTs. Tag ratios and mark rates from tribal net fishery. |
| Hoh River (WDF-WDFW-33) | Sport<br><br>May 1 through August 31 | Daily bag limit 6, of which only 1 adult may be retained. Release unmarked adult Chinook. Minimum size limit of 12". | No sampling | Sol Duc Hatchery - WDFW/Salmon River Hatchery - QIN<br>Queets is a DIT | Lack of direct sampling. | Catch from catch record cards and CWTs. Tag ratios and mark rates from tribal net fishery. |
| Willapa Bay Areas 2G, 2H, 2K, 2L, 2M (WDF-WDFW-27) | Commercial<br><br>August through November | Gill net, with recovery boxes. | Dockside sampling and onboard observers. | Forks Creek is a DIT. | | Catch from fish tickets. Standard CWT estimates. |

Table 3.3. (Continued) Summary description of Chinook mark-selective fisheries proposed for the 2012 fishery season, for which proposals were submitted by agencies in 2011.

| Location | Fishery Type and Period | Regulation | Sampling | Indicator Stocks Impacted | Comments and Concerns | Methods of Estimation |
|---|---|---|---|---|---|---|
| Willapa Bay Area 2.1 (MSF-WDFW-26) | Sport<br><br>July through January | Daily bag limit of 6, of which up to 3 adults may be retained. Release Chum and unmarked Chinook. Minimum size limit of 12". July regulations concurrent with ocean fishery. | No sampling for CWTs. VTR program. | Forks Creek is a DIT. | Lack of sampling. | Catch from catch record cards. Mark rate and tag ratios from commercial fishery. |
| Willapa Bay Tributaries (MSF-WDFW-27) | Sport<br><br>July through January | Daily bag limit of 6, of which up to 3 adults may be retained. Release Chum and unmarked Chinook. Minimum size limit of 12". | No sampling for CWTs. VTR program. | Forks Creek is a DIT. | Lack of sampling. | Catch from catch record cards. Mark rates and tag ratios from hatchery and spawning ground data. |
| Snake River Fall Chinook (MSF-IDFG-04)<br><br>Snake River, from the Idaho/ Washington border upstream to the base of Hells Canyon Dam, and in the lower 1.7 miles of the Clearwater River. | Sport<br><br>September 1 to October 31 | Expected bag limit is 6 adults per day and 18 in possession with no limits on jacks. (Adults are 24 or more inches total length and jacks are less than 24 inches total length.) There are no sub-legal encounters in this fishery. | Visual sampling for CWTs | There is no DIT group among the hatchery releases of fall Chinook. Encounters are expected on Chinook from several acclimation facilities in the Snake and Clearwater rivers (e.g., Nez Perce Tribal Hatchery, Lyon's Ferry Hatchery, Umatilla Hatchery, Irrigon Hatchery). | | Angler effort, numbers of adult and jack adipose-fin clipped caught and retained and numbers of adipose-fin clipped and unclipped adults and jacks released in this fishery are estimated from data collected in a temporally and spatially stratified roving creel program.<br><br>IDFG assumes a 10% hook and release mortality for Chinook encountered and released in the fall Chinook salmon fishery. |

Table 3.3. (Continued) Summary description of Chinook mark-selective fisheries proposed for the 2012 fishery season, for which proposals were submitted by agencies in 2011.

| Location | Fishery Type and Period | Regulation | Sampling | Indicator Stocks Impacted | Comments and Concerns | Methods of Estimation |
|---|---|---|---|---|---|---|
| Lower Snake River Spring/Summer Chinook (MSF-WDFW-28) | Sport<br><br>April to June | Daily bag limit of 2 marked adult Chinook, plus jacks. Release wild (unmarked) adult Chinook. No night fishing for salmon. Barbless hooks only. | Creel survey to estimate mark rate. Sampling for CWTs using ETD. | Spring Chinook salmon returning to Idaho and Oregon. No indicators, no DITs. | No DITs. | Creel survey for total catch and standard CWT methods. |
| Lower Snake River Fall Chinook (MSF-WDFW-05) | Sport<br><br>September 1 to October 31 | Daily bag limit of 2 marked adult Chinook, plus jacks. Release wild (unmarked) adult Chinook. No night fishing for salmon. Barbless hooks only. | Creel survey to estimate mark rate. Sampling for CWTs using ETD. | Lyons Ferry and Nez Perce Tribal Hatchery fall Chinook. Lyons Ferry fall fingerlings are the CTC indicator stock; but yearlings comprise the DIT stock. | Need DIT group. Need to coordinate sampling by IDFG, ODFW and WDFW. | Creel survey for total catch and standard CWT methods. |
| Yakima River (MSF-WDFW-03)<br><br>Yakima River from Hwy 223 bridge at Granger (RM 83) to Roza Dam (RM 127) north of Selah. | Sport<br><br>April through June, if total run size and proportion of hatchery fish is sufficient for a MSF, while minimizing mortality of unmarked fish. | Retain marked Chinook only. Bag limit of 2/day. Open to bank and boat fishing, 7 days / week (night closure) until reaching a 7.5% ER based on the in-season total river mouth run size estimate. | Creel survey to estimate total catch, with direct sampling and ETD. | Cle Elum, upper Yakima Spring Chinook.<br><br>100% CWT for hatchery supplementation research. | | Catch is estimated using creel survey information and standard methods used for CWTs. |

Table 3.3. (Continued) Summary description of Chinook mark-selective fisheries proposed for the 2012 fishery season, for which proposals were submitted by agencies in 2011.

| Location | Fishery Type and Period | Regulation | Sampling | Indicator Stocks Impacted | Comments and Concerns | Methods of Estimation |
|---|---|---|---|---|---|---|
| Columbia River Fall Chinook (MSF-ODFW / WDFW-05)<br><br>Columbia River mouth upstream to McNary Dam | Sport<br><br>August through December | Retain marked Chinook only. Buoy 10: Bag limit of 2 adults (≥24") per day. Other areas in Washington: Bag limit of 6 salmon, up to 2 adults. Minimum size limit of 12". Other Oregon areas: Bag limit of 2 adults (≥24") and 5 jacks (15"-24"). | Creel Survey CWT sampled with ETD | Big Creek (DIT), Elochoman, Cowlitz, Kalama, Toutle, Washougal, Sandy, Klickitat, and Umatilla R; Spring Creek, Ringold, Priest Rapids, Oxbow, Nez Perce, Lyons Ferry, and Bonneville hatcheries. Naturally spawning fall Chinook in the area of Hanford Reach are also CWTd. Net pen reared fall Chinook returning to the Select Areas may be encountered (Deep River, Youngs Bay, Tongue Point and Blind slough). Lyons Ferry fall fingerlings are the CTC indicator stock; but yearlings comprise the DIT stock. | Creel surveys implemented below McNary Dam, but fishery extends upstream to Priest Rapids. Creel does not cover the whole fishery; therefore, effort estimate will underestimate total effort. CWT sampling below McNary adequate under the assumption that stock/CWT composition is similar below and above McNary. Fishery is mixed bag. Recommend more DIT groups. Mark rates are observed at Bonneville, after the lower river fishery. Should use VTRs. | Creel survey and catch record cards provide catch estimates and standard methods used for CWTs. |

Table 3.3 (Continued) Summary description of Chinook mark-selective fisheries proposed for the 2012 fishery season, for which proposals were submitted by agencies in 2011.

| Location | Fishery Type and Period | Regulation | Sampling | Indicator Stocks Impacted | Comments and Concerns | Methods of Estimation |
|---|---|---|---|---|---|---|
| Columbia River Summer Chinook (MSF-ODFW / WDFW-02) From the mouth to Priest Rapids Dam | Sport<br><br>June 16 through July 31 | Return only marked salmon, release all unmarked salmon.<br>Washington: Daily limit of 6 marked salmon, of which only 2 may be adults. Minimum size of 12"<br>Oregon:<br>Daily limit of 2 marked adult (>24" total length) Chinook and 1 marked jack Chinook (15"-24" total length) | Creel survey with ETD | Upper Columbia summer Chinook. Methow, Wells, Okanogan, Wenatchee | The summer Chinook indicator will be impacted but is not DIT. Creel census below McNary does not cover the whole fishery, which extends to Priest Rapids; therefore, effort estimate will be underestimated.<br>CWT sampling below McNary is adequate if stock/CWT composition is similar below and above McNary.<br>PIT tags could be used to estimate stock composition. | Creel survey and catch record cards provide estimates of catch. Aerial surveys provide effort counts. Mark rates observed at Bonneville Dam for upriver stocks |
| Columbia River Spring Chinook<br><br>Columbia River from the mouth upstream to McNary Dam and near the Ringold hatchery<br><br>(MSF-ODFW / WDFW-03) | Sport<br><br>January 15 through June | Return only marked salmon, release all unmarked.<br>Washington: Daily limit of 6 marked salmon, of which only 2 may be adults. Minimum size of 12"<br>Oregon:<br>Daily limit of 2 marked adult (>24" total length) Chinook and 1 marked jack Chinook (15"-24" total length) | Sport fisheries in the Columbia River are sampled to provide catch estimates, recover CWTs, and collect age-specific biological data | CWT stocks likely to be encountered include the following: Willamette, Cowlitz, Kalama, Lewis, Carson, Little White Salmon, Klickitat, Deschutes, Umatilla, Yakima, Leavenworth, Entiat, Methow, Wenatchee, and all Snake River stocks of spring Chinook.<br><br>Willamette, Lewis, and Sandy River Chinook are indicator stocks. | Creel census below McNary does not cover the whole fishery, which extends to Priest Rapids; therefore, effort estimate will be underestimated.<br><br>CWT sampling below McNary is adequate if stock/CWT composition is similar below and above McNary. | Creel survey and catch record cards provide estimates of catch. Aerial surveys provide effort counts. Standard methods used for CWT estimates |

Table 1.1 [illegible]

| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
|---|---|---|---|---|---|---|
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |

## 3.2 Expected Encounters of CWT Indicator Stocks in MSFs

Multiple MSF's are expected to occur during 2012 in BC, WA, and OR. Table 3.4 and Table 3.5 were constructed using historical information on encounters of tagged and marked fish to identify tagged stocks of Coho (brood years 2003-08, Table 3.4) and Chinook (brood years 2001-6, Table 3.5) that can be expected to be encountered in these areas with MSF's.

Tagged Coho stocks expected to be encountered are included in Table 3.4, all of which are used by the CoTC for their analyses. Mark-selective fisheries in Puget Sound (PS) and Hood Canal largely exploit local stocks. However, tagged fish from all regions are encountered in MSF's in the Strait of Juan de Fuca (SJDF), throughout southern BC, and WA and OR coastal areas.

In 2007, there were 12 Chinook MSF's that occurred and they were largely restricted to PS and to the Columbia River with spring Chinook as the targeted group. Since then, Chinook MSF's have expanded substantially in marine and freshwater areas, with the number of Chinook MSF's doubling to 24 (Table 3.1). In 2010 and 2011, additional Chinook MSF's occurred and have been proposed in the marine waters of BC, PS, WA ocean areas, and freshwater areas in PS and the Columbia River. Further, Chinook MSF's that target later run fish have been added. Prior to 2008, the indicator stocks encountered in MSF's were largely of PS origin or were Columbia River spring stocks. With the additional fisheries now proposed for Canadian waters, WA ocean areas, and in the Columbia River, a larger number of indicator stocks will likely contribute to MSF's (Table 3.5). In addition, MSF's have expanded substantially in PS, both geographically and temporally, with concomitant increases in catch in MSF's for Chinook salmon (Figure 3.1).

In order to monitor the impacts of these expanding MSF's, Chinook DIT programs must be expanded to represent the new stocks that will be encountered. Agencies, however, have been discontinuing rather than expanding their DIT programs. Agencies should reevaluate their DIT programs and consider expanding DIT releases, not discontinuing programs. The CTC is now struggling to analyze the fishing mortalities attributed to Chinook MSF's because more DIT groups are needed.

Table 3.4 Number of tagged and marked Coho salmon sampled (Obs) and percent of total estimated tags (%Est, expanded for the sample rate) in fisheries or in escapement, averaged over brood years 2003-2008. Some estimates are based on less than six years of data because some stocks were not tagged in all years. Coho salmon escapements are not available in the Regional Mark Information System (RMIS) database of the Pacific States Marine Fisheries Commission (PSMFC), so the percentages shown for BC are only for fisheries.

| Region | | Hatchery / Release Location | # Years Tagged | Mark-Selective Fisheries | | | | | | | | | | Non-Selective Fisheries | | | | Escapement | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | BC | | Puget Sound | | WA Coast | | Columbia R | | OR Coast | | Commercial | | Sport | | | | | |
| | | | | Obs | %Est | Obs | %Est | Obs | %Est | Obs | %Est | Obs | %Est | Obs | %Est | Obs | %Est | Obs | %Est | Obs | Est |
| BC | Nass R. - Skeena | Tolmogan Creek H | 6 | 101 | 17% | - | - | - | - | - | - | - | - | 152 | 67% | 16 | 16% | - | - | 177 | 672 |
| | Coastal BC | Smouth Creek H | 4 | 1 | 2% | - | - | - | - | - | - | - | - | 84 | 61% | 15 | 37% | - | - | 99 | 367 |
| | | McLaughlin Hat SP | 1 | - | - | - | - | - | - | - | - | - | - | 23 | 23% | 6 | 77% | - | - | 29 | 306 |
| | Johnstone Strait | Quinsam River H | 6 | 61 | 47% | - | - | 1 | 1% | - | - | - | - | 9 | 23% | 2 | 28% | - | - | 18 | 120 |
| | | Johnston Est Seapen | 2 | 1 | 1% | - | - | - | - | - | - | - | - | 29 | 25% | 23 | 74% | - | - | 52 | 220 |
| | Georgia Strait | Big Qualicum River H | 6 | 1 | 35% | 1 | 8% | 1 | 4% | - | - | - | - | 4 | 31% | <1 | 22% | - | - | 7 | 36 |
| | | Goldstream River H | 6 | 3 | 34% | 4 | 17% | 4 | 13% | - | - | - | - | 6 | 19% | 1 | 15% | - | - | 17 | 74 |
| | | Long Creek H | 2 | 21 | 50% | 4 | 4% | 3 | 2% | - | - | - | - | 22 | 13% | 11 | 30% | - | - | 64 | 310 |
| | W Vancouver Isl | Robertson Creek H | 6 | 44 | 83% | 2 | 1% | 7 | 3% | - | - | - | - | 22 | 11% | 1 | 1% | - | - | 76 | 578 |
| | Fraser R. - | Inch Creek H | 6 | 15 | 66% | 4 | 8% | 6 | 6% | - | - | 1 | 1% | 11 | 15% | 1 | 4% | - | - | 36 | 227 |
| | Thompson R. | Spius Creek H | 6 | 4 | 26% | 5 | 21% | 11 | 24% | - | - | 2 | 6% | 9 | 22% | <1 | 1% | - | - | 31 | 105 |
| WA | Strait of Juan de Fuca | Dungeness H | 4 | 7 | 15% | 2 | 2% | 5 | 2% | - | - | - | - | 53 | 32% | 2 | 1% | 192 | 47% | 260 | 432 |
| | | Lower Elwha H | 6 | 2 | 9% | 2 | 3% | 4 | 4% | - | - | - | - | 11 | 25% | 1 | 1% | 94 | 56% | 113 | 182 |
| | Puget Sound North | Dartie Cabin H | 6 | 4 | 5% | 19 | 6% | 22 | 4% | - | - | 3 | 1% | 230 | 71% | 18 | 8% | 38 | 4% | 333 | 1106 |
| | | Glenwood Springs | 1 | - | - | - | - | - | - | - | - | - | - | 2 | 100% | - | - | - | - | 2 | 7 |
| | | Kendall Creek H | 5 | 4 | 4% | 5 | 2% | 8 | 2% | - | - | - | - | 171 | 72% | 1 | <1% | 101 | 18% | 289 | 735 |
| | | Lummi Sun Ponds | 4 | 7 | 12% | 6 | 2% | 8 | 3% | - | - | 2 | 1% | 170 | 69% | 3 | 6% | 44 | 7% | 237 | 613 |
| | | Skookum Creek H | 6 | 6 | 4% | 10 | 3% | 17 | 3% | - | - | 3 | <1% | 340 | 77% | 2 | <1% | 183 | 13% | 561 | 1,403 |
| | | Wallace R H | 6 | 8 | 5% | 13 | 3% | 21 | 3% | - | - | 4 | 1% | 39 | 8% | 13 | 4% | 860 | 76% | 959 | 1,661 |
| | | Marblemount H | 6 | 8 | 5% | 15 | 3% | 23 | 3% | - | - | 3 | <1% | 177 | 21% | 39 | 6% | 642 | 62% | 906 | 1,793 |
| | Puget Sound Mid | Elliott Bay TR SP | 4 | 9 | 3% | 31 | 4% | 33 | 3% | - | - | 3 | <1% | 597 | 79% | 42 | 9% | 53 | 2% | 768 | 2,795 |
| | | Voights Creek H | 6 | 9 | 9% | 23 | 6% | 17 | 3% | - | - | 1 | <1% | 191 | 45% | 26 | 11% | 187 | 27% | 454 | 1,288 |
| | | Kalta Creek | 3 | 13 | 6% | 39 | 4% | 36 | 3% | - | - | 4 | <1% | 397 | 41% | 62 | 9% | 847 | 39% | 1,399 | 3,292 |
| | | Soos Creek H | 6 | 6 | 4% | 16 | 3% | 13 | 2% | - | - | 3 | <1% | 171 | 38% | 16 | 4% | 524 | 48% | 750 | 1,715 |
| | | Crowdkill | 3 | 5 | 4% | 23 | 10% | 14 | 3% | - | - | 1 | <1% | 211 | 68% | 33 | 13% | 62 | 2% | 353 | 1,114 |
| | | Crisp Creek Rearing | 3 | 11 | 3% | 48 | 4% | 34 | 2% | - | - | 4 | <1% | 413 | 41% | 30 | 4% | 1,690 | 47% | 2,222 | 4,172 |

Table 3.4. (Continued) Number of tagged and marked Coho salmon sampled (Obs) and percent of total estimated tags (%Est; expanded for the sample rate) in fisheries or in escapement, averaged over brood years 2003-2008.

| Region | | Hatchery / Release Location | # Years Tagged | Mark-Selective Fisheries | | | | | | | | | | Non-Selective Fisheries | | | | Escapement | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | BC | | Puget Sound | | WA Coast | | Columbia R | | OR Coast | | Commercial | | Sport | | | | | |
| | | | | Obs | %Est | Obs | %Est | Obs | %Est | Obs | %Est | Obs | %Est | Obs | %Est | Obs | %Est | Obs | %Est | Obs | Est |
| WA | Puget Sound South | Minter Creek H | 2 | 2 | 4% | 3 | 4% | 6 | 4% | - | - | 1 | <1% | 30 | 28% | 4 | 4% | 186 | 55% | 230 | 337 |
| | | Clear Creek H | 1 | 2 | 16% | 2 | 4% | 5 | 5% | - | - | - | - | 50 | 63% | 2 | 2% | 19 | 10% | 80 | 188 |
| | | Kalama Creek H | 6 | 1 | 3% | 7 | 9% | 3 | 2% | - | - | 1 | <1% | 41 | 39% | 5 | 7% | 122 | 40% | 178 | 311 |
| | | South Sound Net Pens | 6 | 4 | 4% | 10 | 5% | 13 | 4% | - | - | 1 | <1% | 211 | 79% | 16 | 8% | 2 | <1% | 257 | 864 |
| | Hood Canal | George Adams H | 6 | 4 | 3% | 9 | 3% | 13 | 3% | - | - | 1 | <1% | 74 | 23% | 9 | 4% | 662 | 65% | 771 | 1,206 |
| | | Quilcene Bay Sea Pen | 6 | 10 | 5% | 23 | 4% | 21 | 2% | - | - | 2 | <1% | 219 | 52% | 14 | 5% | 425 | 31% | 713 | 1,901 |
| | | Quilcene NFH | 6 | 6 | 4% | 20 | 4% | 17 | 3% | - | - | 2 | <1% | 186 | 53% | 7 | 4% | 375 | 31% | 613 | 1,501 |
| | | Port Gamble Bay Pens | 6 | 4 | 6% | 13 | 7% | 11 | 4% | - | - | 1 | <1% | 123 | 76% | 7 | 6% | 11 | 2% | 169 | 650 |
| | N. WA Coast | Makah NFH | 6 | 3 | 3% | 3 | 1% | 22 | 6% | - | - | 6 | 2% | 26 | 3% | 2 | 1% | 309 | 84% | 370 | 961 |
| | | Quinault NFH | 6 | 8 | 2% | 5 | <1% | 120 | 6% | - | - | 27 | 2% | 606 | 53% | 1 | <1% | 479 | 37% | 1,246 | 4,632 |
| | | Salmon R Fish Culture | 6 | 2 | 1% | 2 | <1% | 50 | 8% | - | - | 12 | 2% | 263 | 57% | 1 | <1% | 204 | 31% | 534 | 1,573 |
| | | Soleduc H | 6 | 9 | 3% | 5 | 1% | 124 | 10% | - | - | 30 | 3% | 61 | 6% | 6 | 1% | 1,206 | 76% | 1,440 | 2,796 |
| | Grays Harbor | Bingham Creek H | 6 | 2 | 1% | 1 | <1% | 41 | 5% | - | - | 7 | 1% | 51 | 7% | 12 | 3% | 939 | 83% | 1,052 | 2,362 |
| | | Friends Landing NP | 3 | 1 | 2% | 1 | <1% | 49 | 17% | - | - | 6 | 2% | 102 | 51% | 16 | 10% | 129 | 18% | 304 | 940 |
| | | Satsop Springs Ponds | 5 | <1 | 1% | 1 | 1% | 8 | 9% | - | - | 3 | 2% | 11 | 8% | 2 | 1% | 209 | 78% | 234 | 402 |
| | | Humptulips H | 1 | 3 | 2% | 1 | <1% | 53 | 13% | - | - | 11 | 3% | 161 | 48% | 4 | 2% | 320 | 31% | 553 | 1,086 |
| | | Skookumchuck H | 3 | 1 | 1% | 3 | <1% | 64 | 11% | - | - | 9 | 1% | 87 | 13% | 15 | 5% | 1,093 | 69% | 1,271 | 1,869 |
| | Willapa | Forks Creek H | 6 | 3 | 2% | 1 | <1% | 56 | 7% | 1 | <1% | 21 | 3% | 126 | 27% | 6 | 2% | 652 | 59% | 865 | 1,879 |
| | | Naselle H | 6 | 2 | 2% | 1 | <1% | 46 | 12% | - | - | 14 | 4% | 131 | 73% | 2 | 1% | 84 | 9% | 279 | 994 |
| | | Nemah H | 4 | 3 | 2% | 2 | <1% | 76 | 14% | - | - | 28 | 7% | 110 | 41% | 1 | 1% | 412 | 35% | 632 | 1,278 |
| CR | Mid and Upper | Oxbow H | 4 | - | - | - | - | 8 | 3% | 5 | 2% | 6 | 3% | 36 | 18% | 1 | <1% | 445 | 73% | 500 | 610 |
| | | Klickitat H | 6 | 1 | 1% | 1 | 1% | 90 | 40% | 8 | 4% | 42 | 21% | 61 | 26% | 4 | 5% | 2 | <1% | 208 | 510 |
| | | Cascade H | 5 | - | - | - | - | 27 | 9% | 14 | 5% | 21 | 8% | 198 | 65% | 1 | <1% | 102 | 13% | 362 | 819 |
| | | Washougal H | 6 | 2 | 1% | 2 | 1% | 89 | 24% | 10 | 5% | 43 | 14% | 64 | 19% | 2 | 1% | 286 | 35% | 498 | 840 |
| | | Wells H | 2 | - | - | - | - | 3 | 1% | 1 | <1% | - | - | 103 | 95% | 1 | <1% | 26 | 4% | 133 | 622 |

Table 3.4. (Continued) Number of tagged and marked Coho salmon sampled (Obs) and percent of total estimated tags (%Est; expanded for the sample rate) in fisheries or in escapement, averaged over brood years 2003-2008.

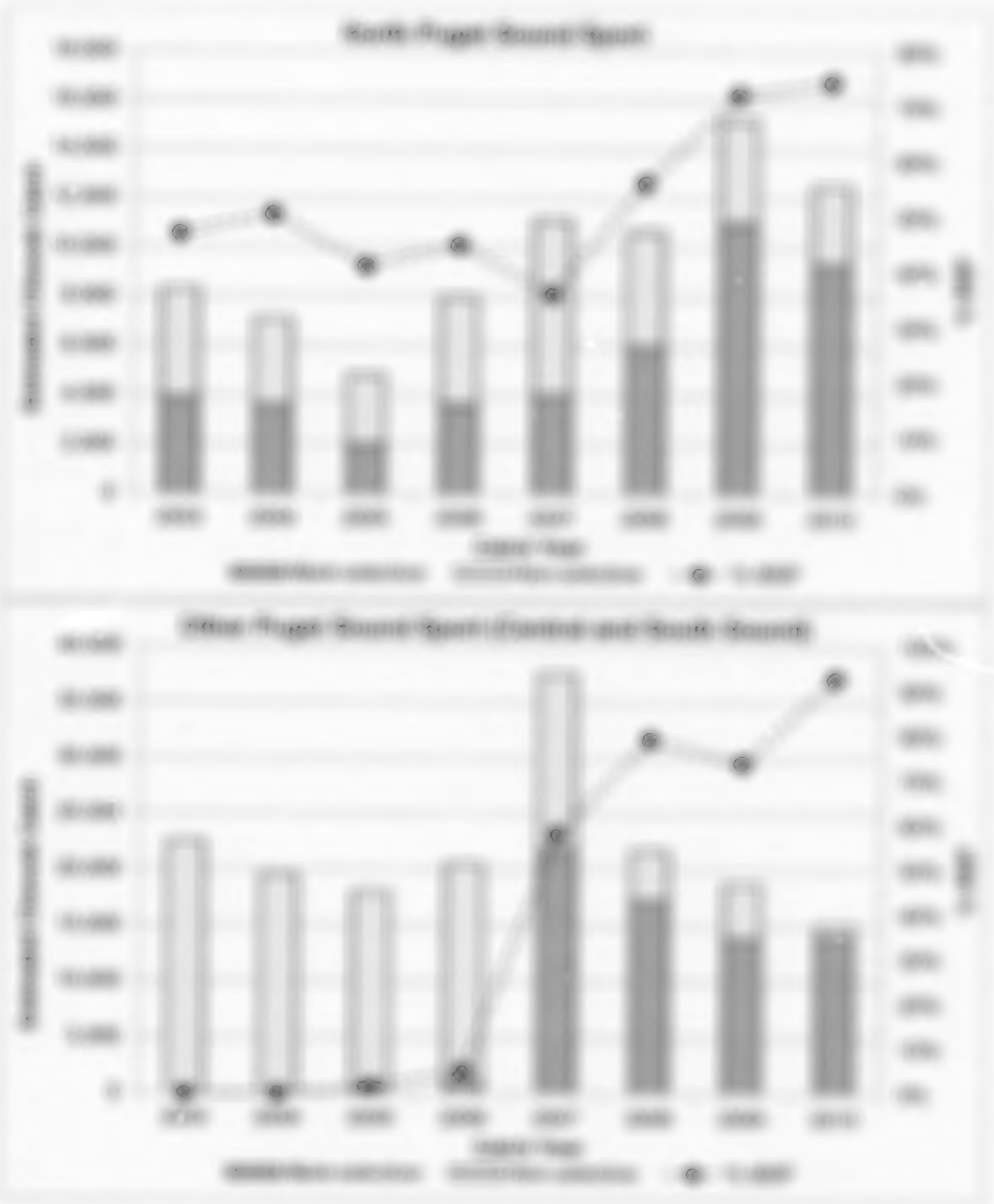
| Region | | Hatchery / Release Location | # Years Tagged | Mark-Selective Fisheries | | | | | | | | | | Non-Selective Fisheries | | | | Escapement | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | BC | | Puget Sound | | WA Coast | | Columbia R | | OR Coast | | Commercial | | Sport | | | | | |
| | | | | Obs | %Est | Obs | %Est | Obs | %Est | Obs | %Est | Obs | %Est | Obs | %Est | Obs | %Est | Obs | %Est | Obs | Est |
| CR | Lower CR | Big Creek H | 6 | - | - | - | - | 18 | 6% | 5 | 3% | 15 | 7% | 70 | 32% | 1 | 1% | 317 | 51% | 424 | 632 |
| | | Bonneville H | 5 | - | - | - | - | 47 | 7% | 16 | 3% | 46 | 8% | 26 | 5% | 2 | <1% | 1418 | 77% | 1,555 | 1,856 |
| | | CEDC Youngs Bay Net | 4 | - | - | - | - | 32 | 8% | 11 | 4% | 27 | 8% | 293 | 80% | 1 | <1% | 16 | 1% | 379 | 1,118 |
| | | Cowlitz Salmon H | 6 | 8 | 2% | 4 | <1% | 374 | 28% | 40 | 6% | 163 | 15% | 178 | 13% | 19 | 2% | 792 | 34% | 1,578 | 2,893 |
| | | Deep River NP | 6 | - | - | - | - | 16 | 6% | 5 | 2% | 15 | 6% | 225 | 83% | - | - | 20 | 2% | 281 | 728 |
| | | Eagle Creek NFH | 6 | - | - | - | - | 15 | 7% | 6 | 4% | 17 | 11% | 22 | 27% | - | - | 104 | 51% | 165 | 481 |
| | | Elochoman H | 5 | <1 | 2% | - | - | 23 | 14% | 3 | 2% | 18 | 14% | 38 | 22% | 1 | 1% | 159 | 44% | 243 | 369 |
| | | Faller Creek H | 6 | - | - | - | - | 22 | 12% | 7 | 8% | 18 | 12% | 11 | 10% | - | - | 252 | 57% | 310 | 431 |
| | | Grays River H | 6 | 1 | 1% | 1 | <1% | 34 | 18% | 8 | 5% | 31 | 18% | 44 | 26% | 1 | <1% | 180 | 31% | 298 | 495 |
| | | Kalama Falls H | 6 | 1 | 2% | 1 | <1% | 40 | 13% | 5 | 7% | 23 | 9% | 51 | 16% | 1 | 1% | 351 | 52% | 472 | 694 |
| | | Klaskanine H | 3 | - | - | - | - | 7 | 6% | 2 | 2% | 5 | 5% | 42 | 56% | - | - | 95 | 31% | 151 | 312 |
| | | Klaskanine S FK Pond | 3 | - | - | - | - | 28 | 9% | 10 | 4% | 21 | 7% | 140 | 63% | 1 | <1% | 141 | 16% | 341 | 908 |
| | | Lewis River H | 6 | 3 | 1% | 6 | <1% | 261 | 12% | 61 | 9% | 148 | 8% | 174 | 8% | 4 | <1% | 2,507 | 62% | 3,164 | 5,055 |
| | | North Toutle H | 6 | - | - | - | - | 34 | 11% | 15 | 11% | 30 | 12% | 14 | 6% | 1 | <1% | 414 | 60% | 508 | 810 |
| | | Sandy H | 6 | 1 | <1% | 1 | <1% | 49 | 11% | 16 | 5% | 38 | 10% | 75 | 16% | 2 | <1% | 665 | 58% | 845 | 1,174 |
| OR | OR Coast North | Nehalem H | 4 | 1 | <1% | - | - | 12 | 2% | - | - | 20 | 5% | 3 | 1% | 1 | <1% | 1,023 | 91% | 1,060 | 1,129 |
| | | Salmon River H | 3 | - | - | - | - | 4 | 5% | - | - | 5 | 11% | 1 | 1% | 1 | 3% | 110 | 80% | 121 | 139 |
| | | Trask River H | 2 | - | - | 2 | <1% | 18 | 4% | - | - | 65 | 14% | 4 | 1% | 1 | <1% | 1,102 | 81% | 1,191 | 1,379 |
| | OR Coast South | Butte Falls H | 1 | - | - | 1 | 2% | 8 | 13% | - | - | 11 | 24% | 5 | 21% | 2 | 15% | 23 | 24% | 50 | 98 |
| | | Cole Rivers H | 6 | - | - | - | - | - | - | - | - | 1 | 2% | - | - | 1 | 1% | 182 | 97% | 185 | 187 |
| | | Rock Creek H | 3 | - | - | - | - | 4 | 9% | - | - | 32 | 76% | 1 | 5% | 2 | 7% | 2 | 2% | 42 | 113 |

Table 3.5. Number of tagged and marked Chinook salmon sampled (Obs) and percent of total estimated CWTs (%Est, expanded for the sample rate) in fisheries or in escapement, averaged over brood years 2001–2006.

| Region | Stock | Mark-Selective Fisheries | | | | | | | | | | Non-Selective Fisheries | | | | Escapement | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | PS | | WA CST | | COLR | | OR | | Total | | Commercial | | Sport | | | | | |
| | | Obs | %Est | Obs | %Est | Obs | %Est | Obs | %Est | Obs | %Est | Obs | %Est | Obs | %Est | Obs | %Est | Obs | Est |
| British Columbia | Kitsumkalum Summer | - | - | - | - | - | - | - | - | - | - | 43 | 10% | 2 | 1% | 4 | 4% | 51 | 5,[illegible] |
| | Atnarko Summer | - | - | - | - | - | - | - | - | - | - | 108 | 13% | 12 | 3% | 114 | 6.0% | 234 | 8,[illegible] |
| | Robertson Creek | - | - | - | - | - | - | - | - | - | - | 245 | 36% | 104 | 21% | 43 | 10% | 392 | 2,[illegible] |
| | Quinsam Fall | - | - | - | - | - | - | - | - | - | - | 45 | 13% | 28 | 10% | 138 | 6.2% | 211 | 5,[illegible] |
| | Pantledge Summer | - | - | - | - | - | - | - | - | - | - | 13 | 10% | 9 | 11% | 149 | 7.2% | 170 | 3,[illegible] |
| | Big Qualicum | 1 | 1% | - | - | - | - | - | - | 1 | 1% | 28 | 1.2% | 2 | 2.0% | 113 | 10.7% | 144 | 4,[illegible] |
| | Cowichan Fall | - | - | - | - | - | - | - | - | - | - | 13 | 16% | 18 | 1.7% | 58 | 38% | 89 | 3,[illegible] |
| | Nanaimo River Fall | 1 | <1% | - | - | - | - | - | - | 1 | <1% | 28 | 4% | 4 | 0.8% | 11 | 7.1% | 44 | 1,[illegible] |
| | Chilliwack (Harrison Fall Stock) | 5 | 1% | - | - | - | - | - | - | 5 | 2% | 115 | 1.4% | 56 | 1.4% | 43 | 1.1% | 219 | 20,[illegible] |
| | Harrison Fall Stock (Chehalis) | 2 | 1% | - | - | - | - | - | - | 2 | 2% | 74 | 1.2% | 24 | 0.9% | 58 | 0.8% | 149 | 9,[illegible] |
| | Lower Shuswap River Summers | - | - | - | - | - | - | - | - | - | - | 101 | 1.9% | 50 | 1.2% | 1,561 | 5.4% | 1,711 | 11,[illegible] |
| | Nicola River Spring | 1 | <1% | - | - | - | - | - | - | 1 | <1% | 13 | 4% | 10 | 8% | 114 | 30% | 138 | 6,[illegible] |
| | Deadman Creek Spring | - | - | - | - | - | - | - | - | - | - | 8 | 34% | 1 | 1.4% | 1 | 4.4% | 10 | 1,[illegible] |
| WA Puget Sound | Skagit Spring Fingerling | 88 | 14% | - | - | - | - | - | - | 88 | 14% | 134 | 1.3% | 24 | 1.4% | 21 | 1.7% | 267 | 3,[illegible] |
| | Skagit Spring Yearling | 60 | 20% | - | - | - | - | - | - | 60 | 20% | 50 | 0.9% | 3 | 1.3% | 146 | 5.1% | 259 | 7,[illegible] |
| | Skagit Summer Fingerling | 3 | 1% | - | - | - | - | - | - | 3 | 1% | 134 | 1.4% | 2 | 0% | 3 | 0.6% | 142 | 4,[illegible] |
| | Nooksack Spring Fingerling | 4 | 2% | - | - | - | - | - | - | 4 | 2% | 73 | 1.4% | 2 | 1.7% | 134 | 4.8% | 213 | 7,[illegible] |
| | Samish Fall Fingerling | 14 | 4% | - | - | - | - | - | - | 14 | 4% | 174 | 1.2% | 48 | 1.9% | 1,018 | 7.9% | 1,254 | 3,[illegible] |
| | Skykomish Fall Fingerling | 6 | 4% | - | - | - | - | - | - | 6 | 4% | 31 | 0.7% | 10 | 1.4% | 364 | 4.7% | 410 | 4,[illegible] |
| | Snohomish Fall Fingerling | 8 | 4% | - | - | - | - | - | - | 8 | 4% | 47 | 1.1% | 18 | 1.1% | 1,041 | 4.7% | 1,114 | 7,[illegible] |
| | Stillaguamish Fall Fingerling | 26 | 9% | - | - | - | - | - | - | 26 | 9% | 111 | 1.2% | 34 | 1.1% | 871 | 10.0% | 1,042 | 3,[illegible] |
| | Green River Fall Fingerling | 17 | 9% | - | - | - | - | - | - | 17 | 5% | 28 | 0.8% | 2 | 1.2% | 42 | 4.4% | 89 | 1,[illegible] |
| | South Puget Sound Fall Yearling | 11 | 20% | - | - | - | - | - | - | 11 | 20% | 2 | 0.6% | 14 | 0.8% | 1 | 1.2% | 28 | 2,[illegible] |
| | White River Spring Fingerling | 28 | 13% | - | - | - | - | - | - | 28 | 13% | 88 | 1.4% | 8 | 1.3% | 34 | 2.0% | 158 | 6,[illegible] |
| | Nisqually Fall Fingerling | 23 | 9% | - | - | - | - | - | - | 23 | 9% | 28 | 4.7% | 10 | 0% | 63 | 3.0% | 87 | 3,[illegible] |
| | George Adams Fall Fingerling | 18 | 9% | - | - | - | - | - | - | 18 | 9% | 93 | 1.9% | 1 | 1.4% | 665 | 3.1% | 784 | 3,[illegible] |

Table 1.5 (Continued) Number of tagged and marked Chinook salmon sampled (Obs) and percent of total estimated CWTs (Tot) at, expanded for the sample rates in fisheries or in escapement, averaged over brood years 2001–2006.

| Region | Stock | Mark-Selective Fisheries | | | | | | | | | | Non-Selective Fisheries | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | PS | | WA (-) | | CBR-B | | OR | | Total | | Commercial | | Sport | | Escapement | | Total | |
| | | Obs | Tot | Obs | Tot | Obs | Tot | Obs | Tot | Obs | Tot | Obs | Tot | Obs | Tot | Obs | Tot | Obs | Tot |
| [illegible] | [illegible] | | | | | | | | | | | | | | | | | | |
| | [illegible] | | | | | | | | | | | | | | | | | | |
| | [illegible] | | | | | | | | | | | | | | | | | | |
| Columbia R | [illegible] | | | | | | | | | | | | | | | | | | |
| | [illegible] | | | | | | | | | | | | | | | | | | |
| | [illegible] | | | | | | | | | | | | | | | | | | |
| | [illegible] | | | | | | | | | | | | | | | | | | |
| | [illegible] | | | | | | | | | | | | | | | | | | |
| | [illegible] | | | | | | | | | | | | | | | | | | |
| | [illegible] | | | | | | | | | | | | | | | | | | |
| | [illegible] | | | | | | | | | | | | | | | | | | |
| | [illegible] | | | | | | | | | | | | | | | | | | |
| OR Coast | [illegible] | | | | | | | | | | | | | | | | | | |
| | [illegible] | | | | | | | | | | | | | | | | | | |



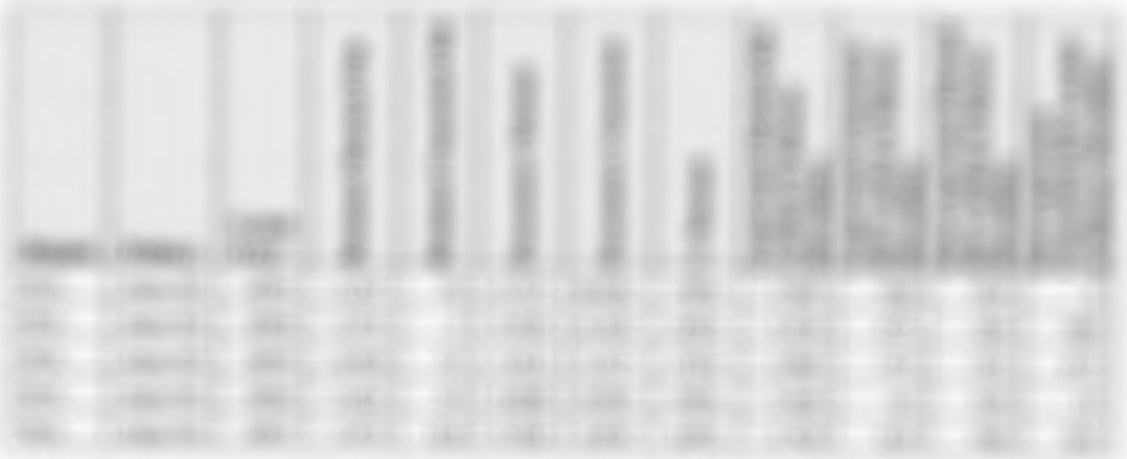
[illegible]

## [illegible]

[illegible]

## [illegible]

[illegible]



## 6.1 [illegible]

(Snuh Creek and Quinsam River). Even where DITs have been implemented, the reliability of results is affected by the lack of electronic tag detection throughout the migratory ranges of the MUs (CoTC 2013). In addition, DIT tagging levels are not high enough to provide sufficient numbers of recoveries for statistically-robust estimates of non-landed mortalities in MSFs. Estimation of ERs or effects of MSFs on natural stocks requires the collection of CWTs from marked and unmarked DIT groups. The lack of direct sampling and electronic tag detection in intercepting fisheries throughout the stock migration results in biased estimates of ERs.

### 4.3.2 Chinook Salmon Double-Index-Tag Groups

Indicator stocks that have been encountered in WA mark-selective fisheries are listed in Table 3.5. Some of these stocks are currently double-index tagged (Appendix H), but many are not. The SFEC recommends that consideration be given to implementing more DIT programs.

## 4.4 Incomplete or Inadequate Sampling Methods

Electronic tag detection (ETD) is necessary for sampling fisheries and escapement where unmarked and tagged fish are present in the samples. In order to carry out exploitation rate analyses for unmarked stocks, aside from estimation of unmarked mortalities in MSFs, it is necessary to have estimates of harvest of unmarked and tagged DIT groups in NSFs. This requires ETD be used in NSFs, where unmarked and tagged fish are present, in particular if the stock has been subjected to MSFs in other areas or time periods. Until 2008, MSFs for Chinook salmon were largely prosecuted in Puget Sound where ETD is used for all fisheries. Electronic tag detection was not used consistently by CDFO in northern fisheries until 2007 and has not been used at all by ADFG. As Puget Sound DIT groups harvested in these fisheries were unlikely to have been subject to preceding MSFs (either the same year or at younger ages), indirect methods (other than direct sampling with ETD) could be used for achieving unbiased estimates of unmarked encounters from marked landings. However, with the mass marking of far-north migrating Chinook and MSFs now proposed for fisheries off of WCVI and WA Ocean Areas 1 and 2, it is no longer reasonable to assume that fish taken in NSFs in all northern coastal areas have not been subject to prior MSFs. The SFEC recommends that agencies review their sampling methods with respect to the current expansion of MSFs into coastal fisheries. It is specifically recommended that ETD be implemented by ODFW in 2012 for Oregon coastal Chinook and Columbia River fall Chinook to recover DITs for Chinook exploitation rate indicator stocks.

## 4.5 Mixed-Bag Regulations in MSFs

Regulations to implement MSFs for sport fisheries are becoming increasingly complex. At this time we are concerned about monitoring, sampling, and estimation methods keeping pace with increases in regulation complexity. MSFs are being proposed for much finer time/area strata than are being used for CWT expansions which will result in an inability to separate impacts in MSFs and NSFs.

Different types of mixed bag regulations have been part of the MSFs proposed by Canada, Washington, and Oregon. In most cases this is a mixed bag, where only marked adults may be kept but marked and unmarked juveniles may be retained (Table 4.2). In addition, in 2009 BC proposed two variations of the 'standard' mixed bag. For the SJDF fishery, both marked and unmarked Chinook could be retained within slot limits (45-67 cm) but marked only at sizes

above the upper limit of the slot. For the WCVI fishery, marked fish of any size above 45 cm can be retained but the daily bag limit of two Chinook can include one unmarked fish between 45 and 77 cm. In Oregon there is a seasonal limit on unmarked Chinook salmon.

These mixed bag regulations present a problem in estimating mortalities of unmarked DIT groups and associated wild stocks. The agencies proposing these mixed regulations should assist in developing the analytical tools to measure the impacts of these fisheries or provide documentation if methods have been developed and employed.

Table 4.2. Mixed bag regulations proposed for Chinook MSFs. Details on regulations are provided in Table 3.3.

| Regulation Type | Examples | Location |
|---|---|---|
| Mixed bag, marked only above maximum size | 2 per day, keep all between 45-67 cm, keep only marked over 67 cm | BC Strait of Juan de Fuca |
| Mixed bag, adults only marked and juveniles marked or unmarked | Bag limit of 6, up to 2 adults (≥24"), which must be marked. Minimum size limit of 12".<br><br>*OR Coast*: May retain 1-2 unmarked salmon (depending on the run forecast) and one additional marked fish (Chinook >24") per day (2 fish maximum per day regardless of type). These regulations do not apply to Chinook jacks (15"-24"). | Puget Sound, Snake River fall Chinook, and Oregon coastal |
| Regulations differ between states in mixed bags of adults and juveniles | The daily limit for adult Chinook is the same between the states, but the daily limit on jack Chinook is different.<br><br>*Washington*: sport daily limit of 6 salmon, of which only 2 may be adults (marked only), minimum size limit of 12".<br><br>*Oregon*: sport daily limit is 2 marked only adult Chinook (>24" total length) and 5 marked jacks (15"-24" total length). | Columbia River Chinook sport fisheries |
| Seasonal limit on unmarked fish | Seasonal limits for unmarked fish may range from 1-10 unmarked Chinook depending on the river system. The catch of marked Chinook has no seasonal limit. | Oregon coastal Chinook |

## REFERENCES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Parken, C., and B. Riddell. 2007. Operational issues with mass marking and mark-selective fisheries. Presentation at AFS Annual Meeting. Available from: www.rmpc.org/mass-marking-and-selective-fisheries-presentations.html. (May 2008).

PSC-CWTW (Pacific Salmon Commission Coded Wire Tag Workgroup). 2008. An action plan in response to coded wire tag (CWT) expert panel recommendations. Pacific Salmon Commission Technical Report No. 25: 170 p.

# APPENDICES

## *Appendix A. Understanding of the Pacific Salmon Commission Concerning Mass Marking and Selective Fisheries (Revised February 2004).*

**Understanding of the**
**Pacific Salmon Commission**
**Concerning**
**Mass Marking and Mark Selective Fisheries**

**February 2004 Policy Statement**

The Pacific Salmon Treaty's Memorandum of Understanding (MOU) obliges the Parties to, among other things, "maintain a coded-wire-tag and recapture program designed to provide statistically reliable data for stock assessment and fishery evaluation." The Pacific Salmon Commission (PSC) recognizes that the selective fisheries for marked hatchery Coho and Chinook salmon can impact the coastwide coded-wire-tag (CWT) program. For the sole purpose of fulfilling this MOU obligation, the PSC has established the following policies and procedures. This policy does not preclude the PSC from evaluating the impacts of, and making recommendations concerning, mass marking or selective fishery plans as they affect the negotiation and establishment of Treaty annex provisions.

It shall be the policy of the PSC to review proposals for mass marking and selective fisheries to determine consistency with the Parties' commitment to the MOU provisions regarding the reliability of data needed for management of salmon fisheries within the jurisdiction and management area of the Treaty, including whether they impose substantial cost increases for agencies to conduct required data collecting programs.

The PSC shall establish a Selective Fishery Evaluation Committee (SFEC) to perform the activities set forth in the attached Terms of Reference.

To facilitate the SFEC review, the Parties shall do their utmost to ensure that their domestic managers submit all proposals for mass marking (MM) and mark-selective fisheries (MSF) which could potentially affect stocks or fisheries of concern to the PSC in accordance with the following schedule:

1. Not later than June 1 of each year. Provide early notice containing the agency's plans to consider conducting MSFs over the next 3-5 years.
2. Not later than June 1 of the year prior to implementation. Provide new or substantially changed MM or MSF project proposals.
3. Not later than November 1 of the year prior to implementation. Provide proposals for MM or MSF programs that are anticipated to continue annually without substantive change.
4. Upon completion of domestic fishery planning processes, agencies conducting MSFs are to provide final selective fishery plans.

5. Upon completion of MM programs, agencies are to report the number of fish that were actually mass marked and the extent to which releases are (single and double index) tagged for assessment.
6. Agencies shall report results of MSFs conducted during a season in the annual post-season report provided, using a format specified by the SFEC.
7. Not later than November 30 of the year following conduct of MSFs. Agencies are to report fishery and stock-age-specific estimates of mortalities for unmarked fish impacted by MSFs to the PSC technical committees

- The PSC shall consider, by the annual February PSC meeting, the SFEC reviews of proposals for MM and MSFs and discuss potential actions to address concerns related to any MM or MSF proposals that the SFEC determines will significantly and adversely affect the CWT program.
- The Parties will do their utmost to ensure that MM and MSF proposals are developed in consultation with domestic co-management agencies or processes, and that proposing agencies or entities provide information required by the SFEC and adhere to reporting requirements to enable the PSC technical committees to complete their assignments in a timely manner.
- After the occurrence of a selective fishery and when the data are available, the PSC shall review the management agency report on the actual conduct of the fishery with respect to its impact on the CWT program, and recommend changes and improvements.

**Terms of Reference for the Selective Fishery Evaluation Committee**

I. Reporting and Committee Structure: The Selective Fishery Evaluation Committee (SFEC) will report to the PSC and will be comprised of a Steering Committee and two working groups: the Regional Coordination Working Group (RCWG) and the Analytical Working Group (SFAWG). All official members of the Steering Committee and working groups will be considered members of the SFEC.

A. Steering Committee: The Steering Committee will be comprised of:
   1. the co-chairs of the PSC Coho Technical Committee, Chinook Technical Committee, and Data Sharing Technical Committee;
   2. the co-chairs of the two working groups;
   3. agency mass-marking/selective-fishery coordinators; and
   4. additional agency representatives approved by the responsible Party.

B. Regional Coordination Working Group (RCWG): The RCWG may be comprised of members of the Steering Committee and other PSC technical committees and of the agency representatives approved by the responsible Party. All RCWG members should contribute actively to the work of this group.

C. Selective Fishery Analysis Working Group (SFAWG): The SFAWG may be comprised of members of the Steering Committee and other PSC technical committees and of the agency representatives approved by the responsible Party. All SFAWG members should contribute actively to the work of this group.

II. Duties of the SFEC

A. Serve as a coastwide clearinghouse to facilitate the appropriate level of coordination and reporting on MM and MSF programs among the Parties, affected agencies, and existing coastwide and regional committees established to monitor activities related to the coastwide CWT program;

B. Provide advice to the PSC regarding potential adverse impacts of MM and MSFs on the CWT program;

C. Assess and monitor the cumulative impacts of MSFs on stocks of concern to the PSC;

D. Provide MM or MSF project proponents with information regarding concerns for potential impacts of their projects on the CWT program.

E. Receive and review MM and MSF proposals from the proponent(s) as early in the planning process as possible to identify potential issues and concerns regarding impacts on the CWT program.

F. Establish a technical evaluation process that will:

1. Review proposed mass-marking/selective-fisheries initiatives developed by the proponent(s) and identify potential impacts on other jurisdictions and the CWT program;
2. Review, in consultation with relevant PSC technical committees, procedures and protocols for marking, sampling, and evaluation developed by the proponent(s) and, if appropriate, develop and recommend alternative procedures to address potential concerns or measures that could be taken to mitigate for adverse impacts on the CWT program;
3. Establish standard formats and reporting requirements for agencies conducting MSFs to use when providing post-season information. Review post-season agency evaluations of the performance of MSFs and their estimates of mortalities on stocks of concern to the PSC;
4. Identify information needs or request modifications of proposals to meet concerns regarding impacts on the CWT program; and
5. Conduct, at agreed intervals, technical evaluations of mass marking and selective fishery programs in order to assist the Parties to maintain the integrity of the CWT program.

G. Work with PSC Technical Committees to establish formal standards and objectives for a viable CWT program to enable more precise evaluation of potential impacts of MM and MSFs on the viability of the coastwide CWT program and to guide the development of mitigation measures.

H. Specific duties of the Steering Committee include being responsible for overall coordination and prioritization of the activities for the working groups and being the focal point for reporting to the PSC. The agency mass-marking/selective-fishery coordinators should ensure that mass marking and selective fishery proposals are provided to the SFEC in a timely manner.

III. Specific duties of the RCWG, among other related activities, include:

A. Coordinate and report on continuing research on electronic detection and mass marking technologies;
B. Collate and share information on CWT sampling procedures and programs; suggest modifications to sampling and monitoring programs to proponents;
C. Review MM proposals to determine potential impacts on sampling and tagging programs;
D. Provide agencies with a list of MM and MSF proposals received by the SFEC;
E. Provide the necessary liaison with the Data Standards Working Group of the Data Sharing Technical Committee to ensure that necessary modifications are made to PSC data exchange formats to maintain the integrity of the CWT system; and
F. Prepare an annual report summarizing mass marking statistics, index tag groups, and sampling programs for marks and CWTs.

IV. Specific duties of the SFAWG, among other related activities, include:

A. Design marking and sampling strategies that will achieve desired precision for CWT-based estimates;
B. Develop analytical tools for the evaluation, by the SFEC and MSF proponents, of MM programs and MSFs and their potential impacts on the coastwide CWT program;
C. Provide the necessary technical liaison with agencies and other coastwide committees working on selective fishery evaluation models;
D. Review and recommend parameter values for assessing impacts of MSFs;
E. Develop analytical tools for estimating the impacts of MSFs on escapements and exploitation rates for naturally spawning Coho and Chinook stocks based on post-season information;
F. Review MSF proposals and provide advice to the proponents regarding the design of MSFs and the conduct of sampling and monitoring programs; and
G. Recommend guidelines, procedures, and/or time frames necessary to evaluate the success of MSFs in conserving naturally spawning stocks.

L. Cassidy
Chair

J. Davis
Chair

## *Appendix B. Mass Marking Proposal Template.*

| |
|---|
| Mass Marking Proposal ID # |
| Date Received |

**TEMPLATE FOR ADIPOSE FIN MASS MARKING PROPOSALS**

This template is intended for proposals to mass mark any release group of more than 100,000 fish from a hatchery complex or area that involves the following:

1) Chinook or Coho salmon,
2) mass marked with an adipose clip, but untagged, and
3) expected to be intercepted in Pacific Salmon Commission fisheries.

**PROPOSAL TITLE:**

Contact information

| | |
|---|---|
| Proposing Agency: | |
| Contact Person: | |
| Mailing Address: | |
| Phone Number: | |
| Fax: | |
| Email: | |

Is the proposal:

new _____
substantially changed _____
or a continuation of a previous proposal _____

Proposed Marking and Tagging

1. Purpose of mass marking:
   a. Provide a brief description of the goals and objectives of the proposal (e.g. to obtain more information on hatchery straying to wild spawning grounds, to increase fishing opportunities, or to identify hatchery/wild compositions in fisheries).

   b. If the proposal is not a new proposal, list the Mass Marking Proposal ID number(s) (assigned by the PSC Executive Secretary) corresponding to the previous proposal. In addition, describe any significant differences from previous proposals (i.e., additions or deletions of mass marked stocks or DIT groups).

   c. Identify potential mark-selective fisheries targeting the proposed mass marked stocks that your agency might pursue in the future.

2. List all proposed mass marking and DIT plans (see example format below), including the following fields: area/region, hatchery, stock, number of fish to be tagged with and without fin clip, number of fish to be untagged with and without fin clip, and price marking status.

   *Example format for proposed mass marking and tagging plans. DIT groups identified with an asterisk (*).*

   *Species:*
   *Brood:*
   *Release Year:*

| Area or Region | Hatchery | Stock | Number to be Tagged | | Number Untagged | | Proposed to be Marked This Brood Year (F Y) | Marked Last Brood Year (F Y) |
|---|---|---|---|---|---|---|---|---|
| | | | w/ Tagcod | Unclipped | w/ Tagcod | Unclipped | | |
| | | | | | | | | |
| | | Total | | | | | | |

3. List any known reviews of the mass marking proposal that have been conducted (e.g., by the Mark Committee) and the outcome of those reviews. List any marking programs/agreements that this proposal may conflict with and briefly describe the possible conflict.

4. List any issues of concern previously identified by the SFEC related to this mass marking proposal and describe how those concerns have been addressed.

**FISHERY INTERCEPTION AND CWT SAMPLING**

1. Provide estimates of the anticipated number of mass marked fish that will be encountered in fishery CWT sampling programs using the format below. In order to standardize estimates between agencies, we would prefer the following methods be used:
   - Use actual CWT recoveries from representative CWT groups (e.g., key or indicator stocks from each region) as basis of estimate
   - Calculate the average recovery rate of tags (# recoveries / # released), using the following three brood years: Coho = BYs 2003-2005, Chinook = BYs 2000-2002
   - Multiply the # of proposed mass marked fish, by production region, by this recovery rate, for the appropriate indicator stock
   - Apportion the mass marked fish to the region/fisheries (see table below) based on the average distribution for the indicator codes
   - The PSMFC RMIS will provide a standardized report that summarizes recoveries in the requested region/fisheries. Simply provide them with a vertical text listing of the tag codes.

| Region | Fishery | Estimated number of marked fish that will be encountered in fishery sampling programs | Electronic sampling currently in place Y/N? |
|---|---|---|---|
| Alaska | Commercial | | |
| | Sport | | |
| Northern BC | Commercial | | |
| | Sport | | |
| Southern BC | Commercial | | |
| | Sport | | |
| Washington (Coast & PS) | Commercial | | |
| | Sport | | |
| Columbia Basin | Commercial | | |
| | Sport | | |
| Oregon Coast | Commercial | | |
| | Sport | | |
| California | Commercial | | |
| | Sport | | |

Describe the source/data and methods used to make the estimates. If different than the preferred method. Provide other information, if relevant, on the distribution, run timing and migration routes of the stocks proposed for marking and/or tagging.

*Appendix C. Mark-Selective Fishery Proposal Template*

| | |
|---|---|
| Mark-Selective Fishery Proposal for: | |
| Date Received: | |

**TITLE FOR MARK-SELECTIVE FISHERY PROPOSALS**

## Contact information

| | |
|---|---|
| Proposing Agency | |
| Contact Person | |
| Mailing Address | |
| Phone Number | |
| Fax | |
| Email | |

Is the proposal

new or not yet reviewed by PSC SHAT _____
alternative(s) changed _____

## Purpose/management objective

Describe the management objective of the proposed mark-selective fishery.

## Location and time of the proposed mark-selective fishery

Please include any information other than an hourly or daily open or regulation that might require sampling stratification (see Question "b" below).

a. Location of the fishery

b. Time and month(s) when the fishery is proposed to occur

## Other information about the fishery:

a. Target species/stocks (including nontarget PSC species/stocks of concern)

b. Gear to be used

c. Other regulatory details (e.g., size restrictions, bag limits, vessel tag) information)

## Projected impacts on the Delany

1. [illegible] [illegible] [illegible]

## Appendix B: Work Schedule / Delivery Proposal Spreadsheet Template

## *Appendix E. Status of Mass Marking Proposals Received in 2011 for Mass Marking to Occur in 2012.*

| Description of Proposal and Agency | New or Continuation Proposal | SFEC Proposal Number |
|---|---|---|
| *Coho Salmon* | | |
| Southern BC Coho – CDFO | Continuation | MM-FOC-01 |
| Puget Sound Coho – WDFW/Tribal | Continuation | MM-WDFW-01 |
| Washington Coast Coho – WDFW/Tribal | Continuation | MM-WDFW-04 |
| Washington Columbia River Coho – WDFW | Continuation | MM-WDFW-05 |
| Eagle Creek NFH Coho – USFWS | Continuation | MM-USFWS-04 |
| Makah, Quileute, Quinault NFH Coho – USFWS | Continuation | MM-USFWS-18 |
| Columbia River Coho – ODFW | Continuation | MM-ODFW-04 |
| Oregon Coast Coho – ODFW | Continuation | MM-ODFW-05 |
| *Chinook Salmon* | | |
| L. White Salmon R. and Spring Cr. NFH Fall Chinook – USFWS | Continuation | MM-USFWS-17 |
| Makah NFH Fall Chinook – USFWS | Continuation | MM-USFWS-19 |
| Willamette River Spring Chinook – ODFW | Continuation | MM-ODFW-01 |
| OR North Coast Spring Chinook – ODFW | Continuation | MM-ODFW-02 |
| OR South Coast Spring Chinook – ODFW | Continuation | MM-ODFW-03 |
| Columbia River Fall Chinook – ODFW | Continuation | MM-ODFW-06 |
| OR Coast Fall Chinook – ODFW | Continuation | MM-ODFW-07 |
| Mid-Columbia R. Spring Chinook – ODFW | New | MM-ODFW-08 |
| Snake River Fall Chinook – ODFW | New | MM-ODFW-09 |
| Snake River Spring Chinook – ODFW | New | MM-ODFW-10 |
| Puget Sound Chinook – WDFW/Tribal | Continuation | MM-WDFW-02 |
| Columbia R. Chinook – WDFW/CRITFC | Continuation | MM-WDFW-03 |
| Washington Coastal Chinook – WDFW/Tribal | Continuation | MM-WDFW-06 |
| Snake River Fall Chinook – IDFG | Continuation | MM-IDFG-05 |

## *Appendix F. Mark-Selective Fishery Proposals Received in 2011 for Fisheries Occurring in 2012.*

Table lists all MSF proposal numbers assigned by SFEC and current status of each proposal (√ = Submitted, X = Discontinued)

| Unique ID | Fishery and Location | Target Species | 2012 Status | First Yr. Proposal | First Yr. Fishery[1] |
|---|---|---|---|---|---|
| | ***Fisheries and Oceans Canada*** | | | | |
| MSF-FOC-01 | *Subdivided into other proposals* | | | | |
| **MSF-FOC-02** | Sport, Southern BC | Coho | √ | 2003 | 2003 |
| **MSF-FOC-03** | FSC, Lower Fraser freshwater | Coho | √ | 2006 | 2006 |
| MSF-FOC-04 | *code no longer used* | | | | |
| **MSF-FOC-05** | Commercial, Southern BC | Coho | √ | 2004 | 2005 |
| **MSF-FOC-06** | Sport, Lower Fraser freshwater | Coho | √ | 2006 | 2003 |
| **MSF-FOC-07** | Sport, Strait of Juan de Fuca, BC, selected subareas | Chinook | √ | 2009 | 2008 |
| MSF-FOC-08 | Sport, WCVI, selected subareas, mainly inside | Chinook | X | 2009 | none |
| | ***Oregon Department of Fish and Wildlife*** | | | | |
| **MSF-ODFW-01** | Sport, Willamette R. | Chinook | √ | 2003 | 2003 |
| **MSF-ODFW-02** | Sport, Oregon coast | Chinook | √ | 2009 | 2008 |
| **MSF-ODFW-03** | Sport, Oregon coast | Coho | √ | 2010 | 2003 |
| | ***Oregon and Washington Departments of Fish and Wildlife*** | | | | |
| **MSF-ODFW / WDFW-01** | Sport, Lower Columbia R. | Chinook | √ | 2003 | 2003 |
| **MSF-ODFW / WDFW-02** | Sport, Columbia R. | Chinook | √ | 2003 | 2003 |
| **MSF-ODFW / WDFW-03** | Commercial, Lower Columbia R. | Chinook | √ | 2003 | 2003 |
| **MSF-ODFW / WDFW-04** | Sport, Lower Columbia R. | Coho | √ | 2008 | 2003 |
| **MSF-ODFW / WDFW-05** | Sport, Columbia R. | Chinook | √ | 2009 | 2011 |
| | ***Washington Department of Fish and Wildlife*** | | | | |
| **MSF-WDFW-01** | Sport, Skykomish R. | Chinook | √ | 2003 | 2003 |
| MSF-WDFW-02 | Sport summer, WA area 5&6; *Included in proposal #35 in 2012* | Chinook | X | 2003 | 2003 |
| **MSF-WDFW-03** | Sport, Yakima R. | Chinook | √ | 2004 | 2004 |
| MSF-WDFW-04 | *code no longer used* | | | | |
| **MSF-WDFW-05** | Sport, Lower Snake R. | Chinook | √ | 2009 | 2008 |
| **MSF-WDFW-06** | Sport, WA Areas 1-4 & Buoy 10 | Coho | √ | 2003 | 2003 |

[1] This is the first year in which the fishery occurred after 2002, the year that SFEC began requesting proposals from agencies. Some Coho mark-selective fisheries began as early as 1998.

| Unique ID | Fishery and Location | Target Species | 2012 Status | First Yr. Proposal | First Yr. Fishery[1] |
|---|---|---|---|---|---|
| | ***Washington Department of Fish and Wildlife (cont.)*** | | | | |
| **MSF-WDFW-07** | Sport, Puget Sound | Coho | √ | 2004 | 2003 |
| MSF-WDFW-08 | *old proposal Area 5&6* | Chinook | X | | |
| **MSF-WDFW-09** | Sport, Carbon & Puyallup R | Chinook | √ | 2005 | 2003 |
| MSF-WDFW-10 | *code no longer used* | | | | |
| MSF-WDFW-11 | Sport summer, WA Areas 5-13; *Included in proposal # 35 in 2012* | Chinook | X | 2007 | 2007 |
| **MSF-WDFW-12** | Sport, Upper Skagit R | Chinook | √ | 2007 | 2005 |
| **MSF-WDFW-13** | Sport, Nooksack R | Chinook | √ | 2004 | 2004 |
| **MSF-WDFW-14** | Sport, Nisqually R, Jul-Jan | Chinook | √ | 2007 | 2005 |
| **MSF-WDFW-15** | Commercial, WA Areas 1-4 | Coho | √ | 2008 | 2003 |
| MSF-WDFW-16 | Sport winter, WA Areas 6-10 *Included in proposal # 36 in 2012* | Chinook | X | 2005 | 2005 |
| MSF-WDFW-17 | *code no longer used* | | | | |
| MSF-WDFW-18 | Sport, Nooksack R | Coho | X | 2009 | 2003 |
| **MSF-WDFW-19** | Sport, WA Coast Areas 1-4 | Chinook | √ | 2009 | 2010 |
| **MSF-WDFW-20** | Sport, Skokomish | Chinook | √ | 2009 | 2010 |
| MSF-WDFW-21 | Troll, WA Coast Areas 1-4 | Chinook | X | 2009 | None |
| **MSF-WDFW-22** | Sport, Willapa tributaries | Coho | √ | 2010 | 2003 |
| **MSF-WDFW-23** | Sport, Grays Harbor, Area 2.2 | Coho | √ | 2010 | 2007 |
| **MSF-WDFW-24** | Sport, Grays Harbor tributaries | Coho | √ | 2010 | 2003 |
| **MSF-WDFW-25** | Commercial, Willapa Bay | Chinook | √ | 2010 | 2010 |
| **MSF-WDFW-26** | Sport, Willapa Bay, Area 2.1 | Chinook | √ | 2010 | 2010 |
| **MSF-WDFW-27** | Sport, Willapa Bay tributaries | Chinook | √ | 2010 | 2010 |
| **MSF-WDFW-28** | Sport, Snake River | Chinook | √ | 2010 | 2010 |
| **MSF-WDFW-29** | Sport, Willapa Bay MA 2.1 | Coho | √ | 2010 | 2010 |
| MSF-WDFW-30 | Commercial, Grays H Area 2C | Coho | X | 2011 | 2009 |
| **MSF-WDFW-31** | Sport, Quillayute River | Coho | √ | 2011 | 2003 |
| **MSF-WDFW-32** | Sport, Quillayute River | Chinook | √ | 2011 | 2003 |
| **MSF-WDFW-33** | Sport, Hoh River | Chinook | √ | 2011 | 2008 |
| **MSF-WDFW-35** | Sport summer, WA areas 5-13; *Incorporates former proposals # 02 & # 11* | Chinook | √ | 2012 | n/a[2] |
| **MSF-WDFW-36** | Sport winter, WA areas 5-13; *Incorporates former proposal # 16* | Chinook | √ | 2012 | n/a[3] |

[1] This is the first year in which the fishery occurred after 2002, the year that SFEC began requesting proposals from agencies. Some Coho mark-selective fisheries began as early as 1998.
[2] See proposal numbers MSF-WDFW-02 and MSF-WDFW-11.
[3] See proposal number MSF-WDFW-16.

## *Appendix G. Current PSC Coho CWT Exploitation Rate Indicator Stocks and DIT Groups.*

| Region | Stock Representation | Indicator Stocks | DIT |
|---|---|---|---|
| BC North Coast | North Coast Wild | Lachmach | |
| | Skeena | Toboggan | |
| Interior Fraser | Thompson River | Coldwater (Spius Hatchery)<br>Salmon<br>Lemieux | |
| Georgia Basin | East Coast Vancouver Island | Big Qualicum<br>Goldstream River | |
| | East Coast Vancouver Island Wild | Black Creek | |
| | Lower Fraser | Inch Creek | √ |
| | Lower Fraser Wild | Salmon River | |
| | North Vancouver Island | Quinsam River | √ |
| West Coast Van Is. | West Coast Vancouver Island | Robertson Creek | |
| Puget Sound | Nooksack | Skookum Creek H.<br>Lummi Bay Ponds | |
| | Skagit | Skagit (Marblemount H.)<br>Baker River Wild | √ |
| | Stillaguamish/Snohomish | Skykomish (Wallace River)<br>Tulalip Bay (Bernie Gobin) | √ |
| | Mid Puget Sound | Green River (Soos Creek H.) | √ |
| | South Puget Sound | Puyallup (Voights Creek H.)<br>Peale Pass (Squaxin Net Pens)<br>Nisqually (Kalama Creek H.) | √ |
| | Hood Canal Wild | Big Beef Creek | |
| | North Hood Canal | Quilcene NFH<br>Quilcene Net Pens<br>Port Gamble Net Pens | √ |
| | South Hood Canal | George Adams H. | √ |
| | Dungeness | Dungeness H. | |
| | Strait of Juan de Fuca | Lower Elwha H. | √ |
| Washington Coast | North Coast | Makah NFH<br>Solduc (fall run) | √<br>√ |
| | North Central Coast | Queets Wild (Salmon River H.)<br>Queets (Salmon R. Fish Culture) | <br>√ |
| | Quinault | Quinault NFH | √ |
| | Grays Harbor | Chehalis R. Wild<br>Satsop Springs Ponds<br>Satsop (Bingham Cr. H, late)<br>Satsop (Bingham Cr. H., early) | <br><br><br>√ |
| | Willapa Bay | Forks Creek H. (late fall run)<br>Forks Creek H.<br>Nemah R. H.<br>Naselle H. | <br>√ |
| Columbia Basin | Lower Columbia River | Lewis River (Type N and S)<br>Eagle Creek<br>Sandy River<br>Tanner Cr. | √<br>√<br>(dropped)<br>√ new |
| Oregon Coast | Oregon South Coast | Rogue River (Cole Rivers) | |

## *Appendix H. Current PSC Chinook CWT Exploitation Rate Indicator Stocks and DIT Groups.*

| Area | Natural/Unmarked Stock Representation | Exploitation Rate Indicator Stocks | Run Type | DIT |
|---|---|---|---|---|
| S.E. Alaska | Southeast Alaska | Alaska Spring | Spring | |
| British Columbia | North/Central BC | Kitsumkalum | Summer | |
| | West Coast Vancouver Is | Robertson Creek | Fall | |
| | Georgia Strait | Puntledge | Summer | |
| | | Quinsam | Fall | |
| | | Big Qualicum | Fall | |
| | | Cowichan | Fall | |
| | Lower Fraser River | Chehalis (Harrison Stock)[1] | Fall | |
| | | Chilliwack (Harrison Stock) | Fall | √ |
| Puget Sound | North Puget Sound | Nooksack Spring Fingerling | Spring | √ |
| | | Samish Fall Fingerling | Fall | √ |
| | Central Puget Sound | Skagit Spring Yearling | Spring | √ |
| | | Skagit Spring Fingerling | Spring | |
| | | Skagit Summer Fingerling | Summer | |
| | | Skykomish Summer Fingerlings[2] | Fall | √ |
| | | Stillaguamish Summer/Fall Fingerling | Fall | |
| | Hood Canal | George Adams Fall Fingerling | Fall | √ |
| | South Puget Sound | White River Spring Yearling[3] | Spring | |
| | | Green River Fall Fingerling | Fall | √ |
| | | Grover Creek Fall Fingerling | Fall | √ |
| | | Nisqually Fall Fingerling | Fall | √ |
| | | South Puget Sound Fall Yearling | Fall | |
| | Strait of Juan de Fuca | Hoko Fall Fingerling | Fall | |
| Washington Coast | North Wash. Coast | Sooes Fall Fingerling | Fall | |
| | | Queets Fall Fingerling | Fall | |
| | | Quinault Lake Fall Fingerling[2] | Fall | √ |
| | Willapa Bay | Forks Creek Fall Fingerlings[2] | Fall | √ |
| Columbia Basin | Columbia R. (WA) | Cowlitz Tule | Fall Tule | (dropped) |
| | | Spring Creek Tule | Fall Tule | √ |
| | | Little White Salmon[2] | Fall Bright | √ |
| | | Columbia Summers | Summer | |
| | Columbia River (OR) | Columbia Lower River Hatchery | Fall Tule | √ |
| | Upper Columbia R. | Columbia Upriver Bright | Fall Bright | |
| | | Hanford Wild | Fall Bright | |
| | | Priest Rapids | | √ new |
| | Lower Columbia R. | Lewis River Wild | Fall Bright | |
| | | Willamette Spring | Spring | (dropped) |
| | | Lewis River Spring[2] | Spring | √ |
| | Snake River | Lyons Ferry | Fall Bright | |
| Oregon Coast | North Oregon Coast | Salmon River | Fall | |

[1] These stocks are CWT-tagged, but there is no quantitative CWT escapement data, useful for distribution only.
[2] DIT group not currently an indicator stock.
[3] No longer adipose-fin clipped.

## *Appendix I. Mark-Selective Fishery Post-Season Report Templates.*

Templates with examples are provided below in Appendix Tables I.1, I.2, and I.3.

Appendix Table I.1. Sampling methods and processing of tags in all fisheries and escapement locations. Required for choice of estimation of impacts on unmarked fish.

| Region | Sampling Location | CWT Sample Method | Detection Method | Tags Processed |
|---|---|---|---|---|
| North | Net | Direct | Electronic | All |
| | Troll | Direct | Electronic | All |
| | Sport | Voluntary | Visual | All |
| Outside | Net | Direct | Electronic | All |
| | Troll | Direct | Electronic | All |
| | Sport | Voluntary | Visual | All |
| Inside | Net | Direct | Electronic | All |
| | Troll | Direct | Electronic | All |
| | Sport | Voluntary | Visual | All |

Appendix Table I.2. Information on MSFs that have occurred, locations, periods and locations and what sampling and monitoring was conducted to recover CWTs and estimate total encounters and unmarked mortality and compliance in these MSFs. Compliance includes estimation of mark recognition error (marked fish released) and unmarked retention error (unmarked fish retained and landed). Provides information on actual implementation of MSFs proposed for season.

| Region | Fishery Area | Fishery Period | Regulations | Sampling and Monitoring Conducted to Estimate: | | | |
|---|---|---|---|---|---|---|---|
| | | | | CWTs | Encounters | Unmarked Mortality | Compliance |
| Species | | | | | | | |
| Alaska | No MSF | | | | | | |
| Canada | St of Georgia Sport | | | | | | |
| | WCVI sport | | | Creel & voluntary | Creel, guide logbook, test fishing | No | No |
| Puget Sound | Area 5,6 sport Coho | | | Creel & voluntary | Creel, guide logbook, test fishing | No | No |
| | Area 7 sport Coho | | | Creel @ 22.6% | Creel, test fishing | no | yes |
| | Area 7 Reef net Coho | | | Creel @ 15.2% | Creel | no | yes |
| | Area 13 sport Coho | | | Creel @ 0% | No | no | yes |
| Coastal Washington | Area 1 sport Coho | | | Creel @ 11.3% | Creel | no | yes |

| Region | Fishery Area | Fishery Period | Regulations | Sampling and Monitoring Conducted to Estimate: | | | |
|---|---|---|---|---|---|---|---|
| | | | | CWTs | Encounters | Unmarked Mortality | Compliance |
| | Area 2 sport Coho | | | Creel @47% | Creel, observers | no | yes |
| | Area 3 sport Coho | | | Creel @ 45% | Creel, observers | no | yes |
| | Area 4 sport Coho | | | Creel @73% | Creel, logbooks | no | yes |
| | Area 1 troll Coho | | | Creel @ 42% | Creel, test fishing, observers | no | yes |
| Coastal Oregon | Sport Troll | | | Creel @ 42% | Creel | no | yes |
| Columbia R | Columbia R | | | Electronic Electronic | Observer & Creel | yes no | yes no |
| Columbia River | Buoy 10 sport Coho | | | Electronic | Creel | yes | yes |
| | | | | Creel @ 38% | Creel , observer | no | yes |

Appendix Table I.3. Estimated catch, encounters, and mortalities by size and mark status in MSF.

| Region | Fishery | Year | Retained Marked Fish | Retained Unmarked fish | Encounters Marked | Encounters Unmarked | % Marked | Legal-sized Marked fish Landed & Release Mortalities | Legal-sized Unmarked fish Landed & Release Mortalities | Sub-Legal-sized Marked fish Landed & Release Mortalities | Sub-Legal-sized Unmarked fish Landed & Release Mortalities |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WA | Area 5/6 | 2003 | 3,417 | 76 | 5,327 | 8,626 | 38% | 3,287 | 140 | 225 | 0 |
| WA | Area 5/6 | 2004 | 3,571 | 5 | 5,102 | 6,365 | 44% | 3,476 | 477 | 366 | 385 |
| WA | Area 5/6 | 2005 | 2,024 | 53 | 3,412 | 3,237 | 51% | 1,981 | 373 | 351 | 237 |
| WA | Area 5/6 | 2006 | 3,641 | 25 | 5,008 | 5,095 | 50% | 3,546 | 63 | 199 | 15 |
| WA | Area 5/6 | 2007 | 3,971 | 124 | 5,784 | 3,839 | 60% | 3,794 | 432 | 540 | 301 |